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FARM LABOR AND SOCIAL LEGISLATION IN ENGLAND . . .

By A. T. Murray*

Farm workers in many countries have been specifically exempted from the benefits of social legislation extended to industrial workers. In England, while the extension of social legislation to agricultural labor has also lagged, farm workers have had the benefit of minimum wages, old-age pensions, and health insurance for more than two decades. Recently a special scheme for unemployment insurance for farm labor was established by the British Government.

The organization of English agriculture contrasts sharply with countries in which family-type farms dominate. English farming is mainly operated by means of hired labor possessing no more claim to the land than the industrial worker has to the factory in which he is employed. "There are different systems of farming, different sizes of farms and types of farm organizations in the various parts of England and Wales, but taking the whole agricultural system there are about two workers to each farmer." 1/ Generally speaking, therefore, English rural society is composed to a large extent of a permanent class of wage earners whose immediate interest is concerned with wages and working conditions.

While it took several centuries for this system to develop, it crystallized in the eighteenth century. If we go no farther back than the beginning of that century, we find that while the Manorial System had long since disappeared, much of the old framework remained. Thousands of small villages dotted the countryside, surrounded by great open arable fields and adjacent woodlands and meadows to which the inhabitants had common fuel and pasture rights. The cumbersome open-field system of scattered strips still largely prevailed. What is more important, nearly everybody had some land or claim to its common use. Even the squatters or "cottagers," who were at the bottom of the rural society and formed the main source of agricultural labor supply, obtained a part of their income from cultivating a garden or pasturing some cattle on the commons. Apart from the great landlords, there was no hard and fast stratification of rural society. Thus in the early part of the eighteenth century, the prototype of the present farm worker had land which provided some measure of economic security and an "agricultural ladder" was open to him to improve his position.

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*Assistant Agricultural Economist, Bureau of Agricultural Economics.

1/ A. W. Ashby, "The Position and Problem of the Farm Worker in England and Wales," International Labour Review, March 1935, p. 311.

Creation of the Landless Agricultural Worker

The revolution in farming technique

For nearly a thousand years prior to the eighteenth century no material change had taken place in the system of cultivation. 2/ Admittedly it was uneconomical. The great drawback was the large proportion of the land which had to be left uncultivated each year as a consequence of the fallowing process. The general complexity of common rights, and the strip system in particular, hampered the efficient use of the land. The strips were too narrow to permit cross-ploughing, proper drainage was difficult, and unplowed ridges separating the strips were fruitful weed bearers. The grazing of the village cattle and sheep on the unfenced commons made stock improvement and disease control difficult.

The great pioneer of more scientific farming was Jethro Tull who published his observations in 1731. He advocated deep ploughing and thorough breaking up of the soil. Seed should be sown in regular lines, not broadcast, and for this purpose he invented the drill. Tull pointed the way to crop rotation, which would eliminate the necessity of fallow and provide root crops as winter feed for stock. This aspect of farming was taken up by Lord Townsend who elaborated the Norfold system of four-course rotation, namely wheat, turnips, barley, and clover. The provision of winter feed, such as turnips and artificial grasses, made it possible to experiment with cattle and sheep. Robert Bakewell demonstrated that by careful selection and breeding, farm stock could be vastly improved. The new crop rotations provided the means of increasing the yield of cereals, and also the feed for fattening sheep and cattle.

Armed with the new knowledge in technique, the propagandists of the new methods, like Arthur Young who started his celebrated tours in 1767, began a widespread campaign for their general adoption. The movement gained headway slowly, however, for the scattered strips or small farms of the old system were poorly adapted to the new methods. Moreover, the villagers frequently were suspicious of their expediency - an attitude which appears to be justified in the light of subsequent events.

2/ Lord Ernle, "English Farming Past and Present," London, 1936, p. 148; and Arthur Birnie, "An Economic History of the British Isles," London, 1935, p. 255.

On the other hand, the improvers had small patience with the old practices and never wearied of calling for the abolition of the open fields and the common pastures.

The enclosure movement

The large landowners perceived more clearly the advantages of the revolution in agricultural technique. They saw that capital could not be profitably applied to the land until the scattered holdings were consolidated and the old methods abandoned. Moreover, they saw some landowners obtaining ten times as much rent from their estates after adopting the new methods.

Deliberately, the great landowners set about destroying the old English village. The instrument for this purpose was the Act of Parliament permitting the enclosure of the commons. The result of the enclosure was a social upheaval which shook English rural society to its foundations.

In theory, the purpose of enclosure was to redistribute the common fields and waste lands and give each landholder a consolidated holding in place of his scattered strips. On the petition of the landowners of a parish, Parliament passed a private enclosure act and commissioners were appointed to perform the redistribution. But Parliament, composed mainly of the landed aristocracy, tacitly accepted the principle that enclosure in a landlord's own district was chiefly his business and seldom inquired into the details of the procedure. Consequently, the enclosure process was frequently grossly unfair, for the procedure was dominated from start to finish by those who immediately benefited.

But even when the procedure was fairly carried out, the small landholder found himself worse off. He was saddled with his share of the legal expense, he had to meet the heavy expense of fencing his new holding and, worst of all, his pasture rights to the commons were gone. Consequently, he could not raise as many cattle, which were sometimes a substantial part of his income. Small farmers sold out to their wealthier neighbors and their number declined rapidly.

The cottagers, squatters, and small tenant farmers especially felt the brunt of the enclosures and it is chiefly from these classes that the landless laborer of the nineteenth century developed. In general, the cottagers and squatters were driven off the commons, their homes pulled down, and the land which they had cleared turned over to those who could prove common rights. In some places where they had lived in a cottage of their own and had maintained cattle on the commons for more than 20 years, they received some compensation.

The enclosures proceeded rapidly; between 1761 and 1801 more than 3 million acres were enclosed and between 1802 and 1844 about 2.5

million acres more were added. By 1850 practically all the remaining open fields and most of the commons had been swept away.

Demoralization of the Agricultural Laborer

One important result of the enclosures was a much sharper stratification of rural society and the loss by the laborer of the opportunity to improve his position. The new village tended to be divided into three classes: the landlord or landlords, substantial tenant farmers, and a large group of landless farm workers. The old open-field village contained a population which was far too large for the new conditions. Without his former ability to support himself partly on the land, the agricultural worker found that his livelihood depended upon the sale of his labor in an overcrowded market.

The rural poor and the effect of the poor laws

The price which England chose to pay for the new agriculture proved to be a high one. The separation of thousands of farm laborers from the land soon saddled the country with a tremendous poor-relief problem. Some drifted to the towns, but the growing industries were unable immediately to absorb the overflow. In the course of time a large part of rural society came either to depend upon or be directly influenced by the prevailing administrations of poor relief.

The growing pressure of the rural unemployment made the poorhouse hopelessly inadequate to cope with the poor-relief problem. In 1782 a law known as Gilbert's Act was passed by Parliament which excluded the able-bodied poor from the poorhouse and provided for a system of outdoor relief. While adoption of the plan was optional, the increasing demand for poor relief led to its widespread use.

The system of outdoor relief adopted under Gilbert's Act proved to be a curse to the unemployed and the employed alike. The able-bodied unemployed applying to the parish for relief were farmed out as laborers at low wages paid to the parish, which, in turn, was supposed to maintain such workers. This plan of operation gave great impetus to the "roundsmen" system, as it came to be known from the practice of circulation of laborers "on the rounds" from farmer to farmer. Ordinarily, the parish made an agreement with a farmer to sell the labor of paupers individually or in gangs at a certain price, but sometimes the parish contracted to perform a task at a specified price. In other cases, the labor of the poor was auctioned off to the highest bidder. In general, the system depressed wages and put a premium upon the substitution of subsidized pauper labor from the parish for a normal working force.

The demoralizing influence of the poor laws was aggravated by the widespread adoption by the parishes of the resolution formulated at a meeting of the Justices of the Peace at Speenhamland in 1795. The essence of the scheme was that low wages were to be supplemented by parish contributions which varied with the size of the laborer's family and the price of bread. Thus " * * * when the gallon loaf of seconds flour, weighing 8 lbs. 11 oz. shall cost one shilling, then every poor and industrious man shall have for his own support 3s. weekly, either produced by his own or his family's labour or an allowance from the poor rates, and for the support of his wife and every other of his family 1s. 6d. When the gallon loaf shall cost 1s. 4d., then every poor and industrious man shall have 4s. weekly for his own, and 1s. 10d. for the support of every other of his family. And so in proportion as the price of bread rises or falls * * * ." 3/

The Speenhamland policy, therefore, established wages on a "bread and children" scale which soon involved the country in serious social problems. The rural population multiplied at an alarming rate from about 1795 to 1835 and thereby increased unemployment. In some areas the work performed by the parish poor became so extensive that opportunities for the independent laborer became practically nonexistent.

The blighting effect of the poor laws in the rural area was further augmented by the restrictions on the mobility of labor. These restrictions were created by the Settlement Acts dating back to 1662 when they were invoked nominally for the purpose of preventing cottagers and squatters ejected by the enclosures in one area from migrating to other regions and becoming public burdens. Under these regulations paupers could obtain relief only from the parish in which they were born. Moreover, even when opportunities for work existed in a parish, laborers were not permitted to reside there unless they could produce certificates from their own parish overseer, acknowledging responsibility for the laborers in the event they might require relief. In practice, certificates were not generally given, presumably for the reason that the laborer might wander to some distant point in search of work and have to be returned at considerable expense to the parish.

In 1795 the Settlement Laws were modified to the extent that a laborer could not be removed from a parish until he actually became dependent on the poor rate. The preamble to the act itself indicates the situation prevailing at the time. It reads, "Many industrious poor persons chargeable to the parish, township, or place where they live, namely from want of work there, would in any other place where sufficient employment is to be had, maintain themselves and families without being burdensome to any parish, township, or place; and such poor persons are for the most part compelled to live in their own parishes, townships, or places, and are not permitted to inhabit elsewhere under pretense that they are likely to become chargeable to the parish, township, or place into which they go for

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3/ Except for brief periods, the value of the shilling has averaged around 25 cents and the penny (d) about 2 cents. The current value of the shilling is 24.85 cents.

the purpose of getting employment, although the labor of such poor persons might, in many instances, be very beneficial in such parish, township, or place."

The gang system

In some areas the so-called gang system of farm labor developed, paralleling the poor law system, and continued to grow long after the revision of the poor laws. Gangs were organized by gang-masters and were composed of a miscellaneous assortment of farm laborers of all ages and sexes. Most frequently, however, women and children predominated. Gang-masters contracted with farmers for jobs at a specified price, out of which they paid low wages in order to obtain a profit. In addition, the gang-masters made money by selling food to their employees. The gang moved from district to district and usually engaged in potato digging, plant setting, stone picking, and some harvesting operations.

Deplorable conditions arose under the gang system. Almost no restrictions limiting tyranny and exploitation by the gang-master existed and, at best, the system was injurious to the health and morals of young children. The gang system was satisfactory to farmers because of its cheapness, particularly so for work of short duration. Low wages of laborers tempted them to put their children to work in the gangs to supplement their small incomes. The gang system continued to grow as an important form of rural labor organization from the forties through the sixties, particularly when many farmers organized private gangs in competition with those operated by gang-masters and labor contractors.

Social unrest and the increase in crime

The distressed conditions in rural England are indicated by the rioting and incendiarism that broke out frequently, particularly between 1795 and 1830. The disturbances in 1830 were the most general and most serious, when, as the London Times reported, the laborers "exasperated into madness by insufficient food and clothing, utter want of necessaries for themselves and their unfortunate families, collected together, hoping by combined action to improve conditions." In some areas mobs scoured the country demanding food and money and, as had frequently taken place before, farm machinery was destroyed since it was regarded as an important cause of unemployment. Troops were called out and the rioting eventually was stamped out.

One of the characteristics of the period was the harshness and severity of criminal justice. Trivial offenses, such as the theft of food or the poaching of game birds, were punished by long prison terms and even by hanging. For example, in March 1818 several farm laborers were sentenced to death for alleged offenses, among them "William Kehos, aged 22, a (former) private soldier in the 95th Regt. of Foot, charged with feloniously slaughtering and stealing from the close of Matthew White of Lincoln one wether hog."

The Reform Movement

Probably the revision of the poor laws under the Act of 1834 marks the beginning of a period of slow amelioration of the laborer's position. The new poor-relief policy established national uniformity of treatment for various classes of poor and drastically reduced the eligibility of able-bodied applicants. The parochial system was replaced by poor-law unions, or groups of parishes, in which workhouses were established and the former outdoor-relief system abolished. The drastic revision of the poor laws resulted immediately in much rural distress, particularly since wages remained depressed for a long while after the subsidies were removed. Nevertheless, it freed the agricultural worker from the toils of the Speenhamland system under which there was no hope of improvement.

Regulation of gangs and the educational acts

In the sixties official reports concerning the miserable conditions existing in the rural areas received considerable publicity. The evils of the gangs and the low standard of living of laborers generally became excellent newspaper copy and aroused much public moral indignation. As a result, in 1867 the Gangs Act was passed, which provided that no woman or girl could be employed on a gang in which men worked and no children under 8 years could be employed at all. Gang masters were required to be licensed and could only employ women or girls when a licensed gang mistress traveled with the gang.

A campaign for extending education in rural areas produced some results in the following decade. The motive of the reformers was partly to improve the elementary educational opportunities, which were conspicuously inadequate in rural areas, and partly to reduce the amount of child labor in agriculture. The Act of 1870 provided for additional schools, while the Agricultural Children Act, 1873, attacked specifically the problem of child labor by providing that no child under 8 years could be employed in agriculture except by his parents on their own farm. Children over 8 years might be employed, providing a certificate was supplied showing that the child had 250 school attendances during the year. If over 10 years old, 150 attendances were sufficient. The measure ceased to apply after the child had passed the fourth grade. In 1876, the Agricultural Children Act was repealed and regulations were made more stringent. School attendance was made compulsory, generally speaking, up to the age of 14.

The employment of children in agriculture has gradually and progressively been reduced as educational standards have advanced. But the efforts made in the seventies to change the system met considerable opposition. Child labor had been utilized to a great extent for weeding and stone picking - operations which tended subsequently to be neglected; it was also objected that men instead of boys had to be hired to drive plow horses or perform similar tasks, thereby increasing farming costs.

Agricultural trade unions

The English agricultural laborer, like his fellow workers in the cities, tried to improve his lot but with little success. The first attempts of the laborers to improve their condition through collective action were short lived. In 1832, six farm laborers met to form a trade union. They were arrested and condemned to 7 years in the Australian penal colonies.

No further attempt was made until some 40 years later when public opinion toward unions had changed and their legal status was improved by Acts of Parliament. In 1872 Joseph Arch, a farm laborer and also a Methodist preacher, organized a union of about a thousand members. The union grew rapidly and several small strikes were successful in increasing wages. The movement attracted several prominent men, among them Jesse Collings and John Stuart Mill. While the union concerned itself with immediate improvement of working conditions, it also supported a broad program of reform. One of its leading objectives was to assist or encourage laborers to emigrate from depressed areas, particularly from the southern counties. It has been claimed that the union was instrumental in obtaining the emigration of some 700,000 laborers to the more favorable rural areas, to industrial districts, or to the British colonies. The general program of the union included also the advocacy of land allotments and of cottage gardens for the agricultural workers, the abolition of child labor, the better education of the young, the provision for the sick and aged, and the reform of local government.

The Union had been in existence about 2 years when it ran into strong opposition from the farmers' alliance organized to resist the union's demands. A strike in 1874 arose over a demand for a 54-hour week and an increase in wages from 13s. to 14s. per week. A lockout followed and the strike proved to be a disastrous failure. The loss of the strike revealed the inherent weaknesses of agricultural trade unions as a means of collective bargaining. The difficulty of maintaining contact with a scattered membership and the surplus of unskilled labor available to take the places of the strikers were serious weaknesses. Moreover, the union had difficulty in obtaining funds for its activities since its members could ill afford to spare dues from their low pay. Arch's union struggled on and several smaller organizations were formed, but, in general, the agricultural unions played an insignificant role throughout the remainder of the nineteenth century.

Revival of the trade unions after about 1906, following a long period of quiescence after the crushing defeat of the seventies, probably indicates the growth of the labor attitude. The Agricultural Laborers Union or its successor, the National Union of Agricultural Workers, and the Workers' Unions by 1919 probably had together 190,000 members. The old difficulty of maintaining contact with a scattered membership and other difficulties have operated, as in the past, to prevent unions from organizing more than a small part of agriculture. Union membership declined after 1920, and at present its influence is restricted to certain areas. Nevertheless, trade unionism apparently has moulded the attitude of a large number of unorganized farm laborers toward improvement of their status as workers.

Allotments and small holdings

The thread of the movement to restore the laborers to the land by state action may be traced through the nineteenth century and well down to the present time. This means of improving the position of the laborer was based on the view that his degradation had arisen from the loss of the land and hence improvement would come by returning him to it. As Professor A. W. Ashby said, "The existence of this class (of farm laborers) and its conditions has never been accepted by social students of several schools of thought as permanent, or as socially beneficial, or desirable. Suggestions of change in the status of a large proportion of the class, and of widespread development of small holdings or family farms, are continually arising from idealistic or philanthropic sources; and sometimes from 'conservative' sources on the theory that a large peasant class is necessary for the support of existing constitutional arrangements and economic institutions and for the preservation of the social virtues * * * * 4/."

The small holdings movement has not been concerned exclusively with improving the lot of the landless agricultural laborers but in some periods with land reform, in a broad sense, taking shape in back-to-the-land movements, rehabilitation of the ex-soldiers, industrial unemployment relief, or other social objectives.

As early as 1796 a "Society for Bettering the Condition of the Poor" was founded, which gave some attention to inducing landlords to assist laborers in obtaining small allotments of ground. Some attempts were made to obtain small plots, either for gardening or for pasture, during the process of enclosure. Several of the early nineteenth century poor laws also contained limited provisions authorizing the parish to obtain land for cultivation by the poor. Significant expansion of the principle, however, ran into serious opposition. Farmers and landowners claimed landholding by laborers made them negligent and idle, as well as "saucy and independent." More independent thinkers attacked the principle, among them Bentham and Malthus, the latter holding that such measures could result only in more serious overpopulation.

The movement to obtain land for laborers by legislative means, however, achieved importance in the seventies and eighties. Jesse Collings became the champion of the legislation although the movement was supported by many eminent figures, among them John Stuart Mill and John Bright. After 1875, a prolonged depression in agriculture set in and the whole question of revision of the existing land distribution came into prominence. Henry

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4/ A. W. Ashby, op. cit. p. 321.

George's book, "Progress and Poverty" excited much public attention in England and so did Dr. Wallace's "Land Nationalisation." 5/

As a result of this agitation, two general plans emerged. One aim was to provide "allotments" or small plots of land publicly owned but rented to laborers. In this way it was hoped the laborer could obtain a small piece of land at a reasonable distance from his home on which he could maintain a garden to supplement his income from wages. Another scheme centered itself around the small-holdings idea to permit anyone desirous of cultivating a small farm to purchase, through public assistance, sufficient land to maintain himself and his family. It was expected that the small holdings would at least open the way for some laborers to become landowners.

The outcome was the Allotments Act of 1887, which was designed to create both allotments and small holdings. The measure, however, was weak and ineffectual and in 1892 a more satisfactory small-holdings bill was passed. It provided that County Councils might borrow at 3 percent from the Public Works Loan Commission, to buy land and sell it in parcels of from 1 to 50 acres. One-fifth of the purchase price had to be paid at once and the rest in 50 years or the Council might elect to keep one-fourth of the purchase price as a permanent rent on the land. Another bill passed in 1894 provided for the further increase of allotments through the district and parish councils established by the act and given compulsory power in obtaining rented land for allotment purposes. Provisions were made in the act for fixity of tenure and fair rents.

The Small Holding Act of 1892 showed small results after 15 years of operation, since only permissive powers were given to County Councils to acquire land. The defect was remedied under the Small Holdings and Allotments Act of 1908. While both holdings and allotments increased considerably up to the World War, the results fell far short of the expectations of the measure's supporters.

A revival of the small-holding movement occurred during the post-war period, and up to 1932 about 27,000 tenants had been established on 450,000 acres and some 760 owner-occupiers on 6,000 acres. But the post-war small holdings movement has arisen largely from reasons other than the desire to improve the status of the agricultural laborers. For a time it was advocated as a means of rehabilitating returned soldiers and at other times as means of relieving industrial unemployment, as a back-to-the-land movement, and as a means of increasing the nation's food supply.

Aside from certain weaknesses of the early small-holding acts, adverse general economic developments had tended to preclude widespread use of this method of improving the laborer's position. Of these factors,

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5/ The famous naturalist, who formulated the theory of evolution independent of Darwin, urged that the recovery by the community of the land taken from it was an essential condition of a return to general prosperity.

probably the most potent is the industrial development of Great Britain with its increasing reliance on the importation of the more cheaply produced foodstuffs from overseas. Moreover, with the increased use of farm machinery, the question arises as to how successfully small holdings can compete with large-scale production overseas, or, for that matter, with domestic large-scale production.

In general, the demand for allotments from farm workers has come largely in periods of low wages such as that of the eighties and nineties. In 1895, 483,000 allotments were reported for England and Wales, but the period of most rapid expansion was during the World War when allotments increased in urban areas to augment the wartime demands for food. The number of allotments, which reached a high point in 1918 of some 1,350,000, has declined sharply since then. It is problematical as to how successful laborers can be in improving their position by devoting their scanty leisure to raising their individual food supply. In any event, there has not been any large general demand for allotments in recent years.

Minimum Wages

The decade prior to the World War was marked by the enactment of important social legislation. Both the Old Age Pensions Act of 1909 and the National Insurance Act of 1911, establishing health insurance, directly benefited agricultural laborers. Unemployment insurance, however, introduced in England in 1911 was not extended to agricultural workers.

Of far greater importance was the Trades Boards (Minimum Wages) Act of 1909 which radically changed the approach to the farm labor problem. From 1911 onward, agricultural laborers and their unions, which had shown a strong revival, advocated the establishment of minimum wages for agriculture. Many industrial unions gave active support to this movement largely because of the belief that low agricultural wages produced a competitive labor threat, and it gained considerable public sympathy. Moreover, by this time many of the more ardent supporters of the small holdings and allotments movement had become disillusioned over its possibilities as a means of substantially improving the lot of the farm worker. Farmers, however, opposed minimum wages, claiming that agriculture could not pay higher wages unless the scheme was related to minimum or higher prices for farm products. The World War brought a minimum agricultural wages scheme into operation on such a basis.

Minimum wages during the World War and the immediate post-war period

The World War greatly reduced the farm labor supply and at the same time made an increase in the food supply imperative. With the view of increasing the domestic food supply, the Corn Production Act of 1917 was passed, which established guaranteed prices for grain to farmers. Part II of the Act contained provisions for the establishment of minimum wages for farm labor. A Central Wages Board for England and Wales was set up, which in turn established District Boards. Similar agencies were set up for Scotland and Ireland. The Central Wages Board was comprised of 16 representatives of farmers, 16 of labor, and 9 neutral members appointed by the Board of Agriculture. District Committees were also constituted on a similar basis.

Recommendations for alteration in the wage rates were put forward by the District Committees, which were passed upon by the Wages Board. Findings of the latter board were published and had the force of law. The Board was empowered to deal with rates of remuneration for all forms of farm laborers, including women and boys, and employees of subsidiary rural industries. It could fix also the scale for piece work, hourly rates, and overtime and maximum hours of labor.

Determination of wages was based upon a cost-of-living index and findings took into account regional differentials in wage levels. The act itself established 25s. per week as a minimum wage, which was almost 50 percent above the 1914 level. Successive minimum wage levels for southern districts, which were usually considerably lower than the northern districts, were as follows: Early in 1918, 30s. per week, a year later 30s. 6d., in April 1920, 42s., and in August 1920, 46s. Some difficulties arose over the wage differentiation of special classes of farm labor; sometimes special wage scales for certain kinds of farm work were obtained by granting overtime or by wage differentials above the standard minimum wage. The practice was not uniform, however, and considerable variation existed between regions. Some objection arose also as to the manner of determining the cost of living index since it was claimed the index was weighted by factors not ordinarily important to farm workers.

With the repeal of the Corn Production Act, the Wages Board ceased to exist after October 1, 1921. Conciliation Committees were established in the former districts of Wages Committees and operated on a voluntary basis. The functions of the committees were mainly those of arbitration or informal agreement, since the awards became legally binding only if they were confirmed by the Ministry of Agriculture and Fisheries. And, in any event, the findings were enforceable for only 3 months. The period was marked by falling commodity prices and economic depression, and consequently wages were fixed for short periods only, usually for a month. The last wage fixed by the Wage Board had dropped to 42s. per week for September 1921. Under voluntary committees, wages fell steadily until late in 1922 they were 32s. and by the end of 1924 had fallen to 25s. per week. Hours of work also were generally lengthened. As a matter of fact, the voluntary-committee scheme was weak and eventually broke down.

The Agricultural Wage (Regulations) Act, 1924

With the coming into power of the first Labor Government in 1924, the compulsory minimum wage scheme for agricultural workers was again established. It is embodied in the Agricultural Wages (Regulations) Act of 1924 which set up an Agricultural Wages Board for England and Wales and Agricultural Wages Committees for each county or group of counties. An equal number of representatives of farmers and employees sit on all committees and also several members appointed by the Ministry of Agriculture and Fisheries. The regulations adopted under the act provide that the farmers' representatives be nominated by the National Farmers' Union and the farm workers by the Agricultural trade unions. The local committees, which under the wartime scheme were empowered only to recommend wages to the central board, have now actually the power to fix minimum wages for their respective areas while the Central Wages Board at London merely acts in a supervisory capacity.

In fixing wages, the act specifies that "a committee shall, so far as practicable, secure for able-bodied men such wages as in the opinion of the committee are adequate to promote efficiency and to enable a man in an ordinary case to maintain himself and his family in accordance with such standard of comfort as may be reasonable in relation to the standard of his occupation." It will be noted that minimum wages so established refer to "able-bodied men." In addition to this standard minimum wage rate, the committees established minimum wage rates for special classes of agricultural workers and also rates for piece work. In practice, the special minimum rates have been applied mainly to livestock workers. Different wage scales are also established for males under 21 years and female workers. All minimum wages so established refer to a standard week of a specified number of hours, frequently containing 50 to 52 hours in summer and 48 hours in winter. Work performed in addition to these hours is paid for at overtime rates with separate overtime scales for weekdays and holidays.

While the administration of minimum farm wages in England and Wales is based upon regional wage differentials, the trend has been toward greater uniformity. For example, while minimum wages in force September 30, 1936, ranged from 28s. to 37s. 6d., over 70 percent of the areas varied between 31s. and 32s. 6d., or by 1s. 6d. Moreover, the range of the highest and lowest wage areas tends to be lessened by greater uniformity in hours per week and the relative opportunities of earning overtime.

The Committees have tended to shorten the hours of labor and increase the number of holidays with pay during the year. A weekly half-day holiday (usually Saturday) has been established in nearly all areas by defining work performed in this period as overtime. The Wages Committees also determine the value of board and lodging which may be included in the minimum wages. Frequently these are established at 15s. per week. The value of certain other benefits is also determined. The most important of these is the rent of cottages, which are usually valued at about 3s. per week.

The Ministry of Agriculture and Forestry is charged with enforcing minimum wages established by the Wages Committees. For this purpose the Ministry appoints inspectors to investigate complaints that wages are below minimum, and also test inspections are made on the farms other than those for which complaints have been received. The latter inspections are sometimes made at random, although usually they occur in districts in which the inspectors have reason to believe violations have taken place. A substantial part of the complaints of under-payment of wages are disposed of through correspondence. For example, while 3,705 complaints were received in 1936, only 2,240 required investigation by an inspector. In 974 cases either the complaint was found to be unjustified or the underpayment was so small as to require no further action than to request employers to remedy the situation. In the remaining cases some £14,000 were recovered for employees either by court action or voluntary repayment.

Development of unemployment Insurance for Farm Workers

Since the first unemployment insurance act of 1911, industrial workers have had the advantage of the tendency toward the increased scope and liberalization of benefits. In all of the earlier acts, however, agricultural workers were excepted from the insurance scheme.

Investigation of parliamentary committees

When the Act of 1921, which extended the provisions of the unemployment scheme to practically all industrial workers, was being considered, some attention was given to the extension of the plan to include farm laborers. The report of the Committee on Unemployment Insurance appointed by the Agricultural Wages Board, however, recommended that agricultural workers should not be included in the insurance scheme. The committee pointed out that there was little support from either laborers or employers for unemployment insurance as well as a lack of data to devise a special scheme for agricultural workers.

At the time, little unemployment existed and many rural workers felt that inclusion in the insurance scheme would mean payment of contributions relatively higher in proportion to their wages than in other industries, thus causing them to bear part of the burden of unemployment outside of agriculture. By 1926, after a period of some unemployment in agriculture, labor sentiment was more favorable to inclusion in an insurance scheme. In that year the subject was again considered by an inter-departmental committee. The majority report favored a special scheme with lower contributions but with the same rate of benefits as other industries. It was suggested that one-half of the contributions be paid by the exchequer and one-fourth each by the employers and employees. The minority report held that there was no rural unemployment but on the contrary a shortage of labor which in the future would be accentuated by a decline in the number of farm workers and for other reasons.

Regardless of how correct this latter view may have been at the time, there was little doubt that considerable unemployment existed when the Royal Commission on Unemployment Insurance reviewed the whole problem in 1931. The majority report admitted the need for the extension of unemployment insurance to agriculture but objected because of the technical difficulties in establishing a scheme. It was brought out at the hearings of the Commission that the industrial unemployment insurance scheme was endangered by leaving about a tenth of the working population uninsured. Farm workers tended to drift to the cities and take up insured trades, sometimes only long enough to qualify for unemployment insurance. Consequently, the insured industries apparently tended to support unemployment in agriculture.

The Unemployment Insurance (Agriculture) Act, 1936

While the desirability of an insurance scheme for farm laborers gained increasing support, opinion varied as to the type of scheme which should be adopted. On May 15, 1935, the Minister of Labor announced that the Government had accepted unemployment insurance for agricultural workers in principle, without necessarily being committed to a specific scheme. Embodying largely the recommendations of the Unemployment Insurance Statutory Committee, a bill was introduced in the same year which became the Unemployment Insurance (Agriculture) Act of 1936.

It is estimated that the act will eventually apply to about 750,000 persons and the average unemployment of those insured will be about 7.5 percent. The law provides that the agricultural system shall be financially self-contained and that there shall be a separate agricultural account in the unemployment fund. The Unemployment Insurance Statutory Committee will make separate financial reports for the agricultural and the general unemployment insurance systems. Agricultural employment within the meaning of the act covers employment under any contract of service or apprenticeship on the farm with the exception of the employment of sons, daughters, certain other near relatives, or private domestic servants. The weekly rates of contributions by both employers and insured persons are fixed at 4.5d. for men 21 years of age and over; 4d. for women aged 21 years and over and for young men between the ages of 18 and 21. Lower contribution rates are established for young women and boys and girls.

The weekly benefit rates amount to 14s. for men aged 21 years and over and 12s. 6d. for women. The benefits for boys and girls begin at rates about half those of the adult rate and scale down according to age. Additional benefits for dependents are 7s. for an adult dependent, 3s. for the first dependent child, and 2s. 6d. for each additional child with the maximum weekly benefit fixed at 30s. Insured persons are eligible for benefits when not less than 20 weekly contributions have been made in the 2 years immediately preceding the date on which a claim for agricultural benefit is made. These benefits are paid for 12 days for the first 10 weekly contributions standing to the credit of an insured person at the beginning of the benefit year and for 3 additional days for each additional contribution, with the maximum benefits restricted to 300 days per year. The first benefits were paid in November 1936 when about 17,000 or 3 percent of the insured agricultural laborers received unemployment allowances. During 1937 the weekly average number of claimants was approximately 12,000 and the average weekly benefits 14s. 5d. On December 31, 1937, the Ministry of Labor reported that the agricultural account had a balance of £1,824,987.

Conclusions

A number of factors have contributed to the improvement of the status of the agricultural laborer and amelioration of the deplorable conditions prevailing during the first three quarters of the nineteenth century. In the first place, the reduction of the great surplus of rural labor which existed 75 years ago has aided materially. Paradoxically, advancement has been promoted by forces which have resisted efforts to return the worker to the land. The great technical improvements in English agriculture have operated in the long run to make a higher standard of living possible. While total agricultural output has decreased since the seventies, the efficiency or output per worker, whether engaged in arable farming or livestock raising, has increased substantially.

While agricultural workers in England are still a low-paid group, their condition is improving. Not the least important part in this improvement has been played by social legislation establishing old age pensions, health insurance, minimum wages, and unemployment insurance. Perhaps the most important of these measures has been the fixing of minimum wages under the auspices of the Government.

While the creation of the Wages Boards was precipitated by the war situation, public desire to improve the historically depressed rural labor conditions has made minimum wages a permanent policy. As a piece of social legislation it gives tacit recognition to the inherent weakness of rural labor organizations and the greater difficulties of collective trade union action compared with those facing workers in industry. In more recent years, with increased Government subsidization of agriculture, wage regulation has provided some assurance that the benefits from subsidies are more or less equitably distributed among all groups of rural society.

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AGRICULTURE IN PERU*

Peru is primarily an agricultural country, with about 85 percent of the population dependent on this industry. Most of the production is for domestic consumption although substantial quantities of cotton and sugar are exported. Peru is of particular interest because agriculture in that country had reached a high degree of development long before the Spanish conquest. Under the rule of the Spaniards, farming was neglected for the quicker profits of the mining industry, and it is only in recent years that the Government of Peru has made a concerted effort to restore agriculture to its former importance.

Historical Background

At the time of the Spanish conquest (1531-1535) Peru was the center of the great Inca Empire, which at its zenith extended north to include much of the present-day Ecuador and south to the regions of northern Argentina and Chile. As testified by early Spanish records, and by architectural remains of this and earlier periods, there had been developed in the Inca Empire prior to the conquest an Indian civilization which in many prospects was the equal, if not the superior, of that found in any other part of the Americas.

Agriculture in certain respects had reached a high degree of development as judged by European standards of the time. Irrigation, mountain terracing, and granaries for the storage of surplus production were developed on a large scale. Simple rules of fertilization, making use of fish and guano from the sea coast, were observed. Farming was necessarily on an intensive basis, however, as the use of draft animals was unknown, and the llama of the mountain regions provided the only beast of burden. Intensive food production, however, made possible the release of labor for the construction of highways, mountain terrace and irrigation systems, and massive stone temples and fortresses, remains of which still exist as monuments to the Inca and pre-Inca architectural and engineering skill.

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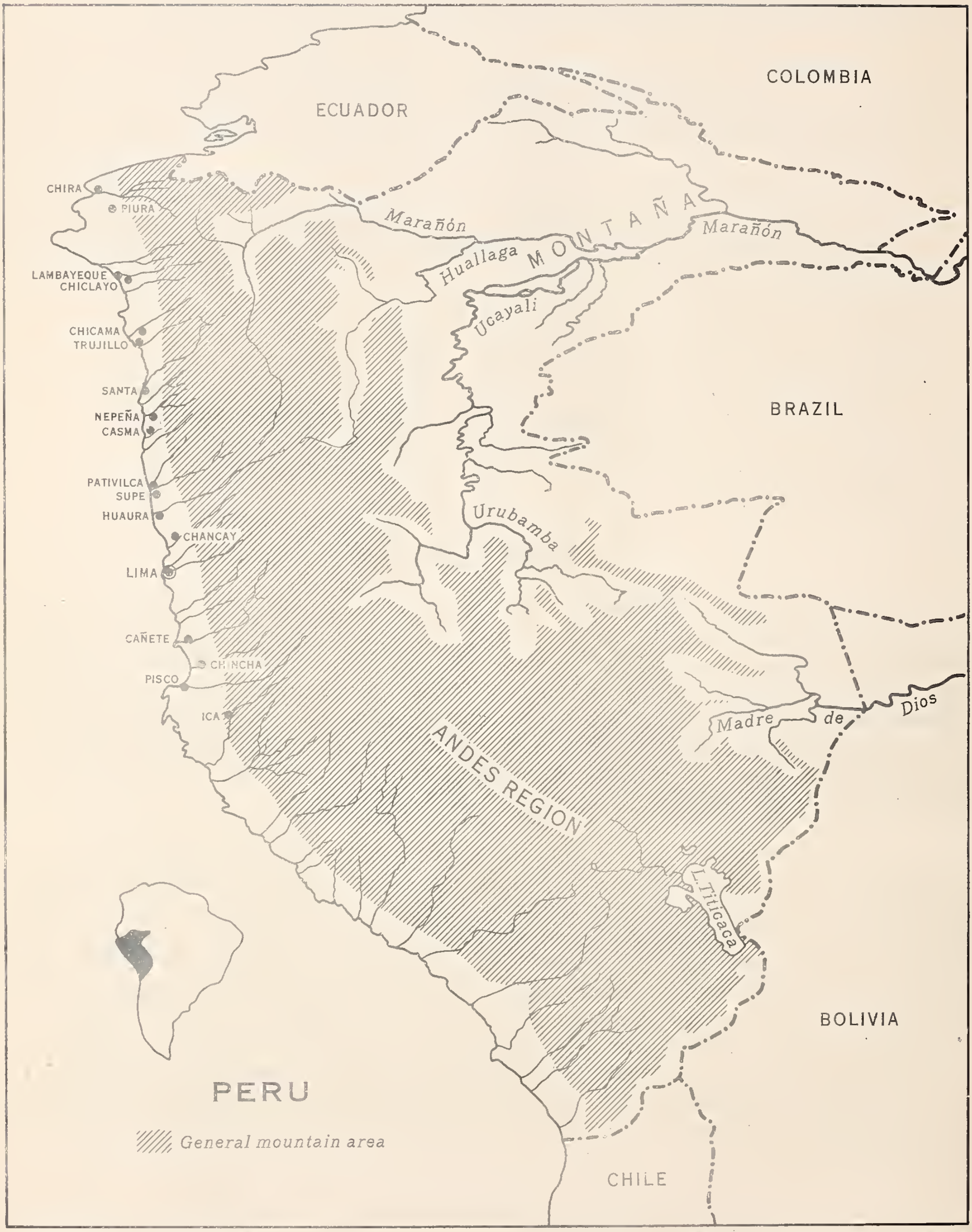
*Prepared by E. P. Keeler, Senior Agricultural Economist, and C. H. Barber, Junior Agricultural Economist, Bureau of Agricultural Economics. Based in part on a report by American Consul General Homer Brett, Callao-Lima, Peru.



U.S. DEPARTMENT OF AGRICULTURE NEG. 34432 BUREAU OF AGRICULTURAL ECONOMICS

FIGURE 1.- MAP OF PERU

A communal system of farming was followed, the village lands being divided into two sections, one for use by the inhabitants of the village and the other for collective cultivation for the State and for the Sun - worshipped by the Incas as their Supreme Deity. The section given over to village use was subdivided annually among the inhabitants according to individual or family needs. The section devoted to the State and to the Sun was cultivated collectively. Half of the produce of this latter area was given to the Inca, or Emperor, for the support of the ruling family, the Army, and Government employees, any surplus being stored in State granaries for use in national emergencies. The second half was devoted to the Sun, and was used for the support of the priesthood and religious institutions, and for charitable purposes.

Following the overthrow of the Inca Empire by the Spaniards, agriculture went through a period of decline. In Peru, as in other parts of Latin America in which mineral resources existed, the early Spaniards neglected agriculture for the quicker profits to be gained by exploitation of the mineral wealth of the country. Forced labor in the mines brought about a decline in the Indian population, and much of the earlier agricultural area was abandoned. Later in the colonial period, however, there was a revival of interest in agriculture, and present-day Peru is indebted to Spain for the introduction of not only the draft animals and cattle of Europe, but other foreign products such as sugarcane, various grains, and temperate-zone fruits. Temporary setbacks were suffered during the War of Independence (1821-1824) and again in a war with Chile (1879-1884).

Agricultural production was largely for domestic consumption until the last quarter of the nineteenth century. Toward the close of the century, however, exports of sugar, and, subsequently, of cotton, began to occupy important places in Peruvian export trade. Until about 1924, sugar occupied first place in value as an agricultural export product. In that year, cotton replaced sugar as Peru's leading agricultural export commodity, and with substantial increases in production in more recent years, cotton now far exceeds sugar in value as an export commodity. These two products now make up over 85 percent of the value of Peru's total agricultural export trade.

Geography: Three Distinct Regions

The Republic of Peru lies just south of the equator. A part of its boundary has not been definitely determined but the area of the country is estimated at 482,000 square miles, or about one-sixth that of the United States. Its population is officially estimated at approximately 6,250,000, or less than one-twentieth of that of continental United States.

Peru is divided geographically into three distinct regions, which determine the nature and extent of Peruvian agriculture: (1) A narrow coastal plain, along the Pacific Ocean, averaging about 40 miles in width, and comprising about 10 percent of the total area of the Republic; (2) the

Andes Mountain ranges, approximately 200 to 250 miles wide, extending the full length of the country, and making up about 40 percent of its area; and (3) the region east of the Andes, known as the Montaña, which comprises about 50 percent of the total area of the country. The Montaña region, separated from the remainder of the country by the Andes, is tributary to the Amazon basin and comprises the eastern slopes and foothills of the mountains and a great expanse of low-lying and forested tropical area.

The amount of land now under cultivation is estimated by the Peruvian Bureau of Agriculture to be approximately 3,617,000 acres, which is equivalent to only 1.2 percent of the total area of the country. About 29 percent of the area under cultivation is reported to consist of irrigated land in the coastal area.

Coastal region

The coastal region contains the centers of urban population. Despite the fact that it is almost rainless, with agriculture confined to valleys where irrigation is possible, it produces virtually all of Peru's two major export crops, cotton and sugar, as well as an important cereal crop - rice. Over 50 rivers cross this arid belt, but only 20 have their sources in the higher mountains of the Andes and have a fairly large flow throughout the year. About 20 others rise at lower heights. Their flow varies greatly with the season and amount of rainfall in the mountains, and they are less dependable as sources of irrigation. The remaining streams depend on the scant rainfall in the foothills and are of little value for irrigation.

Except at irregular intervals of 25 years or more, when torrential rains fall, the only precipitation in the coastal region consists of fogs and mists, which provide not more than 1 or 2 inches of precipitation per year. The aridity seems to be due to two meteorological facts: (1) the southeast trade winds lose their moisture against the east side of the mountains and pass over the Peruvian coast as dry winds, and (2) the Humboldt Current flowing from the Antarctic northward along the coast is very cold, and the moisture-bearing clouds which form over it encounter warmer air over the coastal desert which prevents precipitation until the clouds reach the snowy peaks of the Andes chain. For unknown reasons, at long and irregular intervals, the Humboldt Current bends seaward and the warm water from the equator flows along the shore. When this occurs, terrific rains fall on the desert lands and work havoc in erosion.

The almost complete absence of rainfall in the coastal area permits the narrow alluvial valleys crossing this region to retain valuable soil elements which the rivers bring down from the mountains and deposit in the valleys at flood season. The valleys not infrequently contain areas of sand and gravel, however, which cannot be cultivated. The chemical composition of the soils and their proportions of sand and clay vary widely with the nature of the mountain areas over which the streams have flowed.

Mountain area -

The high mountain valleys and plateaus, which were the seat of the former Inca Empire, are still the most thickly inhabited parts of Peru, except for the areas about the coast cities and in the better-watered and more fertile of the valleys which cross the coastal plain. The mountain population is made up almost entirely of Indians, who, so far as food crops are concerned, practice chiefly a self-sufficiency type of agriculture. Wheat, corn, potatoes, beans, and certain other cereals and vegetables are grown by the Indian population, primarily for their own consumption and for sale in the towns and villages of the uplands. Rainfall is usually sufficient for quick-maturing varieties of these crops and for pasturage, but irrigation is practiced in many of the more fertile mountain valleys and slopes to increase yields.

In the mountain regions, with a wide range of temperature from the warm foothills to the snow-covered peaks of the Cordillera, agricultural production varies widely with altitude. In the lower valleys and foothills, up to an altitude of 5,000 or 6,000 feet, tropical or sub-tropical products, such as cassava and sugarcane, are of considerable importance. From about 6,000 to 11,000 feet, cereal crops, principally corn and wheat, lead in importance as food crops. Above 11,000 feet, potatoes rank first as a food crop, although wheat, barley, and broad beans are frequently grown at altitudes of from 10,000 to 12,000 feet. Above 12,000 feet, the grazing of llamas, alpacas, sheep, and cattle is the main agricultural pursuit, although potatoes and certain other mountain crops are grown on a small scale up to 13,000 or 14,000 feet.

Most of the livestock industry of the country centers in the mountain area. Sheep-raising, in particular, has attained a considerable degree of importance, especially in the southern part of the country. While cattle are raised quite widely in the highlands, at altitudes of from 9,000 to 13,000 or 14,000 feet, they do best at lower levels, particularly in the mountain valleys and lower slopes on the Pacific side of the Andes where the climate is less rigorous. The higher and colder parts of the mountain area, at altitudes of 13,000 feet and over, are the native home of the llama and the alpaca.

Handicaps to agriculture in the mountain area include the limited transportation facilities, which make the marketing of surplus production costly, the inertia of the Indian population, the rocky nature of the soil, and the fact that the small size of the individual fields, the mountainous terrain, and the rocky soil make impractical the use of modern farm implements. Increases in agricultural production in the mountain area will doubtless depend largely on improvement in existing communications, and education of the Indian population.

Montaña or Amazon region

Agriculture in the regions lying east of the Andes, which comprises about half of the total area of the country, is of negligible importance, and is likely to continue so for many years, primarily because of natural obstacles to transportation. This area is without railways or highways. The most practical means of shipment of bulk commodities is by river streamer from Iquitos down the Amazon River to the Atlantic Coast, a distance of nearly 2,300 miles. Shipment to the West Coast involves crossing the Andes range, at present an almost insurmountable barrier to transportation of agricultural produce. Work is being carried on, however, on a highway from the coast through the Andes to a river port on a tributary of the Amazon, which, when completed, will open the eastern part of the country to colonization.

Population in the Montaña region is extremely sparse, and its agricultural possibilities have not been thoroughly explored. It is believed, however, that the mountain slopes and the low-lying regions to the east offer commercial possibilities for production of crops common to the tropics, if the problems of transportation and population can be solved.

Place of Agriculture in Peruvian Economy

Mineral products make up almost 60 percent of the value of Peru's total export trade, and agricultural products about 40 percent. Nevertheless, agriculture is of far greater importance in the internal economy of the country than is mining. While there has been no census in recent years, it is estimated that at least 85 percent of the country's population of approximately 6,250,000 people is directly or indirectly dependent upon agriculture.

While no official census has been taken since 1876, estimates indicate that about 55 percent of the total population is made up of Indians, most of whom derive their livelihood from agriculture in the mountain area, or from work on the large plantations in the coastal valleys. The Mestizo population, of mixed Indian and white blood, which comprises about 35 percent of the country's population, is less dependent on agriculture, but many of the members of this group also derive their livelihood from the soil, either from their own farms or as laborers or renters on the larger holdings. A considerable portion of population of pure European extraction, which comprises about 10 percent of the total population, is also dependent on agriculture, a majority of the large sugar, cotton, and rice plantations being in the hands of foreign families or their descendants.

Farming Types and Methods

Cultivation practices

Two types of farming, representing the two extremes in methods, exist side by side in the coastal region of Peru. The large estates, which account for most of the cotton and sugar production and a smaller percentage of the total rice production, generally are equipped with modern implements and machinery. These large landholders practice scientific improvement of plants and soil, produce most of the food and feed crops needed on the plantations, and in most cases have their own gins or mills. On the other hand, there are many small farmers in the coastal region who use oxen and primitive implements, producing primarily for their own needs, and selling any surplus to itinerant buyers or nearby estate owners. A number of these small farm owners are gradually increasing their landholdings by careful reinvestment of their savings. The small farmers generally find the production of rice and other food crops that can be sold in the domestic markets, direct to consumers, more profitable than the production of sugar or cotton.

Farming methods in the mountains are almost entirely by hand, on small plots of land, except in the lower valleys and foothills.

Crop rotation is not generally practiced in Peru. Sugarcane and some varieties of cotton grown in the coastal region are perennial, and agriculture on the large estates has developed primarily around these crops. Since all commercial farming in this region is done by irrigation, land is too valuable to divert large amounts of it to surplus forage crops or to pasturage. Instead, large amounts of natural fertilizer, in the form of guano, are used, and irrigation water adds some soil elements.

Irrigation

Aside from its necessity in the coastal area, irrigation is practiced to some extent in the mountains to increase productivity. Practically all irrigation works are privately owned, but the Peruvian Government is making heavy expenditures of public funds to improve and extend the systems. In the equable climate of the Coastal region, crops can be grown at all seasons of the year where water is available, but their planting time is usually determined by the periods in which the maximum flow is available. The dates of the flow vary in different valleys, and make for differences in planting and harvest times. This enables groups of laborers to travel from one district to another with the harvest.

Of the total of about 1,040,000 acres of irrigated coast land, the shares devoted to the major crops in 1936 were approximately as follows: Cotton, 39 percent; sugarcane, 13 percent; and rice, 11 percent. The remaining area (37 percent) was devoted principally to food crops for the coast population, and to forage crops and grain for livestock.

Fertilizer

A basic element in Peruvian agriculture is the use of guano. This natural fertilizer is deposited on islands off the coast of Peru by millions of sea birds. In the rainless climate it is not washed away, but accumulates. When first exploited about the middle of the nineteenth century, some deposits were hundreds of feet thick. Millions of tons were exported to Europe and furnished a major source of Government revenue for a number of years. Subsequently, with gradual exhaustion of the deposits, the Government intervened, and placed exploitation of the deposits under strict control. Annual production of guano at present does not exceed 145,000 short tons, which is inadequate to meet the requirements of domestic agriculture. Maximum prices to farmers are fixed by the Government.

Government Aid to Agriculture

Transportation facilities

Transportation between the interior of the country and the urban centers of population along the coast is a major problem, and the Government is now carrying on a road-building program that is looked upon as an important aid to agriculture. It is believed that there are sufficient potential crop areas in the mountains to supply the country's total requirements of such temperate-climate products as wheat, corn, and barley, the first of which is now imported in considerable quantity. The prohibitive cost of land transportation to consuming centers has been an important factor in preventing development of cultivable areas in the Andes country. Highway construction in the mountainous region however, will necessarily be slow and costly.

Only two railroads ascend the Andes, from the ports of Callao and Mollendo, respectively. Transportation along the coast is largely by streamer, with short railways or highways connecting the plantations in the coastal valleys with the seaports.

Irrigation work

While most of the irrigation systems are privately owned, the Peruvian Government has recently been increasingly active in furthering irrigation work. It is felt that expenditures on this type of public works are well justified because of the employment which they give, and the increases in arable land and farm production which they make possible.

Irrigation is second only to road-building in the public-works program. With the assistance of foreign experts, thorough studies have been made of the national water supply. According to the President's message of December 9, 1937, expenditures on irrigation works, including repairs to existing systems and new works, during the 5 preceding years totaled $3,625,000 and were of benefit to about 587,500 acres of land.

Of this total, 100,000 acres were land to which water was supplied for the first time. It is estimated that it is not possible to increase the irrigated lands by more than 35 or 40 percent of the present irrigated area of about 1,040,000 acres. The costs of irrigating new acreage will doubtless be higher than they were in the case of the land now under irrigation, and will tend to retard progress in bringing additional areas under irrigation.

Educational work

A Bureau of Agriculture, Animal Husbandry, and Colonization is maintained in the Ministry of Fomento. Peruvian agricultural students have been sent to foreign countries for advanced training, and various technical missions have, on occasion, been brought to Peru from the United States, France, Germany, Belgium, and other countries. In 1937 an Italian mission of wheat agronomists toured the country, and gave advice as to how wheat production could be increased.

The Government maintains and operates a School of Agriculture for higher instruction, an experiment station for scientific investigation, and a number of model farms, farm clubs, and itinerant agricultural instructors. Among the outstanding projects undertaken have been measures for the control of insect pests in the important Piura district, the breeding of varieties of wheats adaptable to various mountain regions, and the development of pasture grasses that will thrive on the high plateaus of the Andes region.

Colonization

The Government of Peru has been endeavoring to encourage colonization in the Andes, and in the Montaña region to the east for a number of years, and a few small settlements have been made. The aid offered by the Government is extended to foreigners and nationals alike, but the groups already settled are mostly foreigners. A few colonies of several hundred people each in the Sierra or mountain region are composed mainly of Italians and Yugoslavs.

By a decree of March 25, 1927, the Government offered certain inducements to settlement in the Montaña or eastern region. These were (1) a grant of 25 acres to each settler or 75 acres to each family, free of charge; (2) a subsidy grant of one sol 1/ per day per adult and of one-half sol for minors under 15 during the first 6 months; (3) provision of farm implements, seeds for planting, food supplies, and fare from Callao, for all of which the settler shall reimburse the Government when the condition of his plantation will permit his doing so. This region is so isolated, however, that response to Government efforts at colonization has been slow.

1/ 1.00 sol equals approximately $0.25, United States currency.

Agricultural bank

The Banca Agricola del Peru was founded in 1931, in order to make cheap credit available to farmers. It now has an authorized capital of 15 million soles, a paid-up capital of 10 million soles, and reserves of 452,500 soles. During the year ended September 30, 1937, the bank made loans totaling 14,463,000 soles. Of this total, 13,657,000 soles were in the form of general agricultural loans, 726,000 soles were loaned to small farmers, and 75,000 soles to stock raisers. Costs of making loans, which until 1935 were 2 percent, have now been reduced to 1 percent, and the interest charged to farmers during 1937 averaged 2.7 percent. The balance sheet showed a profit of 130,000 soles, of which 100,000 soles were paid out as dividends and the remainder transferred to reserve.

In addition to exercising its credit functions, the bank does useful educational work in persuading its clients to abandon antiquated methods, to use fertilizers and to follow the scientific methods of cultivation advised by the Government. Four years ago it began a program of loans to small farmers. The amount loaned to these producers has increased from 10,000 soles in 1934 to 159,000 soles in 1935, to 376,000 soles in 1936, and to 726,000 soles in 1937. The numbers of individual loans were 7, 132, 361, and 742, respectively, in the 4 years.

Agricultural Organizations

The best-known private agricultural organization in Peru is the Sociedad Nacional Agraria, founded in 1896. The membership of the society comprises practically all of the more prominent planters of Peru. It is organized into committees for cotton, sugar, rice, cattle, vineyards, and miscellaneous crops. The society maintains an arbitration committee, renders technical assistance to planters, and is active in promoting legislation in the fields of agricultural production and marketing.

Principal Crops

Cotton

Once outranked by sugar, cotton has now become the most important agricultural export crop of Peru. Its production is confined almost exclusively to the irrigated valleys of the coastal region, particularly those in the central area between Pisco and Supe, and in the Piura area in the extreme north. Production in the interior valleys and in the trans-Andean region is insignificant.

Cotton is grown not only on large plantations, as is sugar, but also by many small landowners. Cotton gives employment to more than 100,000 workers, including ginners, mill, and transport workers. Aside from the regular workers, it gives temporary employment to many itinerant laborers who come from the mountain regions for the harvest, returning to their homes at the close of the season. Since more than 85 percent of the crop is exported, to a value, including by products, of $24,000,000 in 1936, it is an important item in the country's balance of international payments. To a considerable extent the economic well-being of the nation depends upon the price of cotton.

The importance of Peruvian cotton as a factor in the world cotton trade, however, lies not in the quantity exported, which at its peak in 1937 amounted to only 355,715 bales, but in the staple length of the crop, which averages about 1-3/16 inches. Peru ranks seventh in world cotton production.

Historical development: Textiles found in pre-historic tombs indicate that cotton was grown and used by the Incas for centuries prior to the Spanish invasion. It was slow in developing on a commercial scale during the colonial era, however, and in the early years of Peruvian independence. The cotton gin did not reach Peru until long after its invention in the United States, and transportation to world markets was too costly for Peruvian cotton to compete successfully. Vessels sailing around Cape Horn could not transport cotton profitably to Europe at rates comparable with those from the American South. For the same reason, it was costly to import food products, and Peruvian agriculture was largely devoted to food products until comparatively recent years.

As in many other areas, a temporary increase in Peruvian cotton production took place when the Civil War in the United States cut off England's supply of cotton from the South. Resultant high prices and encouragement from British spinners at this time stimulated cotton-growing in almost all areas to which the crop was adapted, including Peru. While the cotton industry in Peru remained on an export basis after the Civil War, the trade was of minor significance until about the beginning of the World War period. The opening of the Panama Canal in 1914, which shortened the sea route to the European markets, reduced shipping costs and was undoubtedly an important factor in the subsequent development of the Peruvian cotton industry.

Basic factors: Certain of the basic conditions underlying Peruvian cotton culture do not change. The principal of these is the fact that the crop is grown only in the valleys of the rainless coast (except for insignificant amounts in the Amazon region) and consequently is entirely dependent upon irrigation. The climate is semitropical; there are no killing frosts and no rain to discolor the fiber. In most of the valleys cotton will not yield well without fertilizer, but guano from the islands off the coast is available. The cotton planters usually use from 200 to 250 pounds of guano per acre.

The fruiting of cotton depends upon the date of planting, which in turn is determined by the time when water is applied to the soil. The rivers rise at different seasons as the sun moves southward and melts the snow and ice in the high mountains. Consequently, there is no general cotton planting and harvesting season and no rush of the entire crop of cotton to market at one time. The fact that the growing season is much shorter for some varieties than for others also contributes to differences in the harvest period. In the northern (Piura) district, picking lasts from July to November; about 200 miles south, in the small valleys watered by the Santa, Nepena, and Casma Rivers, it extends from March until June; still farther south in the valleys between Supe and Pisco, where the most important cotton-producing areas are located, it runs from April to September.

Acreage and production: The area devoted to cotton in Peru, as shown in table 1, has increased considerably since 1921, most of the increase having taken place since 1932. During the 5 years from 1921 to 1925, the cotton area averaged 281,000 acres, and from 1932 to 1936 approximately 361,000 acres.

Over the short term at least, cotton acreage in Peru does not appear to show a high degree of sensitivity to price changes, probably because the major competitive crop, sugarcane, is a perennial crop, and one which involves heavy investment in plantation and manufacturing equipment. It is to be assumed that sugar planters are reluctant to shift to other crops without assurance that the alternative crops will prove more profitable than sugar over a long period of time.

While it is frequently reported that there has been a considerable shift from sugar to cotton in Peru, statistics relating to sugar (page 284) indicate that the total acreage devoted to cane showed little variation over the period from 1921 to 1936. During the 5 years 1921-1925 the area in sugarcane averaged 130,000 acres, while in the 5-year period from 1932 to 1936, it averaged 132,000 acres. Doubtless what has occurred is that (1) a substantial part of the new land brought under irrigation has been planted to cotton, and that (2) while certain of the less efficient sugar plantations have shifted to cotton, the more efficient ones have increased acreage sufficiently to offset this shift so far as total cane acreage is concerned.

With regard to possible further expansion of cotton acreage, it is reported that more than two-thirds of all the land on the coast to which it is economically possible to bring water is already under cultivation. The cost of irrigating the remainder will doubtless be substantially higher than in the case of the areas now under cultivation, and progress is likely to be slow. Also, the portions of the sugar districts which are expected to prove more profitable in cotton than in sugar have doubtless already been shifted to cotton, and despite low prices for sugar, investments in the industry are so heavy as to restrict further shifts in the near future.

Table 1. Cotton acreage, production, and yield in Peru, 1921-1937

Year	Area planted	Production	Yield per acre
	Acres	Bales of 478 pounds	Pounds
1921.....	267,748	186,109	332.3
1922.....	275,339	198,875	345.3
1923.....	280,607	212,140	361.4
1924.....	287,175	214,842	357.6
1925.....	292,858	209,700	342.3
1926.....	315,949	246,168	372.4
1927.....	315,922	245,615	371.6
1928.....	283,251	224,528	378.9
1929.....	313,528	302,514	461.2
1930.....	330,343	270,071	390.8
1931.....	313,545	233,835	356.5
1932.....	304,094	242,474	381.1
1933.....	322,419	277,730	411.8
1934.....	366,986	341,962	445.4
1935.....	400,510	392,839	468.8
1936.....	409,000	404,000	472.2
1937.....	a/	424,000	

Compiled from Extracto Estadistico del Peru - 1934-1935, and reports of the International Institute of Agriculture.
a/ Data not yet available.

Yields: Average yields of cotton for the whole of Peru are usually much higher than those for the United States, but are somewhat lower than the average from the irrigated land in the southwestern part of this country. Nevertheless, annual yields of cotton in Peru, as in other places, are affected by climatic factors. Fogs and mists are heavier in some years than others, the time and amount of available irrigation water may vary, day and night temperatures may show greater or less variance, and insect damage is much greater in some years than in others. The long-term trend in yields has been upward, however, due in large part to governmental campaigns to encourage the use of fertilizer, to control insect pests, and to improve methods of cultivation. Improvement in irrigation facilities has doubtless contributed also to the upward trend in yields. Cotton is often grown in small patches and cultivated by hand with meticulous care, which tends to raise the average yield for the country as a whole. The facts that Peruvian cotton, being long-staple, commands a premium on world markets, and that yields are heavy, have usually served to keep the industry on a profitable basis despite high costs of land and fertilization.

Varieties: The principal variety of cotton grown in Peru is that known as "Tanguis." Through experimental work carried out on his cotton plantation in the Pisco Valley, south of Lima, from 1912 to 1916, Fermin Tanguis succeeded in developing a type of cotton resistant to Fusaaium wilt, which was then the worst disease of cotton in Peru. The strain of cotton developed by Mr. Tanguis was not only highly resistant to this wilt, but it produced from 20 to 30 percent more cotton to the acre than any other type then being cultivated. In a very short time it was the only cotton being grown in the Pisco district, and by 1923 it was estimated to constitute 70 percent of the entire Peruvian crop. In 1936, production of Tanguis cotton reached approximately 359,000 bales, or about 89 percent of the entire crop, and it was practically the only type of cotton grown in the valleys in the central coastal region. The staple runs from 1-3/16 to 1-1/4 inches in length, and is white and moderately smooth. The plant is perennial and will produce up to seven crops from one planting the second crop usually being the best.

"Pima" cotton is a recent newcomer to Peru. This is a variety of long-staple cotton developed in the southwestern United States, where it was bred from an Egyptian stock. It is grown only in northern Peru, and in 1936, about 24,000 bales of Pima cotton were produced, constituting 6 percent of the entire Peruvian crop. It has completely displaced the "Aspero" or "Fully-rough Peruvian" variety in the northern valleys. The reason for the change was that "Aspero" cotton was from a perennial plant or tree having a life span of some 15 years, which formed an ideal host for insects and cotton plant diseases. Insect and disease damage became so severe in the warmer valleys of northern Peru as to jeopardize the industry until cotton experts advised the substitution of quick-maturing annual varieties. Pima cotton staple runs from 1-1/4 to 1-1/2 inches in length, is of a cream color and is very fine, silky and strong.

Tanguis cotton cannot be grown profitably in the more tropical northern valleys because the plant does not fruit until 9 months after planting, and this gives insect pests too much time in which to multiply. Pima cotton fruits within about 4 months from planting and enables the farmer to win the race with insects. The growing of perennial cotton plants is prohibited by law in the Piura district in northern Peru, and is discouraged elsewhere.

"Acala" is a variety of medium-staple cotton produced in the Piura district and fruits in an even shorter period than does Pima. In 1936, about 8,000 bales of this cotton were produced, constituting approximately 2 percent of the total Peruvian crop.

Miscellaneous varieties accounted for about 13,000 bales, or the remainder of the crop, in 1936. Of this remainder, Delfos cotton accounted for somewhat more than 5,000 bales, and Semiaspero slightly less. The latter is the only variety of cotton grown east of the Andes in Peru, and is exported from Iquitos, Peru's port on the Amazon.

Diseases and pests: In the coastal valleys of central Peru, where Tanguis cotton is grown, the Government is encouraging the farmers to destroy the plant after the harvest of the second year, to curb the ravages of insects and diseases. Naturally, growers are reluctant to destroy these living plants and engage in what appears to be the wasteful and unnecessary work of replanting. Tanguis cotton was resistant to the only wilt disease (Fusaaium) known in Peru at the time this variety of cotton was developed. Recently, however, verticillium wilt, then unknown, has become a major danger to Tanguis cotton, which is not resistant to this type of wilt. Research is under way by experts, but it is difficult to find a strain which will resist this wilt and still retain the excellent qualities of Tanguis.

The principal fungus diseases are: brown or black leaf stain, manta blanca, and boll stain. All of these are worse in the tropical climate of Piura than they are farther south, but none of them constitutes a major difficulty in cotton growing.

Insect pests common to Peru that are influenced by variations in weather conditions are the sucker beetle (Gasterocercodes gossypii) and the boll borer. Those that are influenced by changes in weather from year to year are leaf worms, plant lice (aphids), arrebiatados or cotton stainers, and crickets. Another group partly affected by weather conditions includes the Peruvian weevil, the plowing worm (Ligyrus maimon), and other beetle larvae. The cotton stainer does far more damage than all the others together, and thrives best in foggy, cool weather as do fungus diseases. The other pests are not serious except at times in a given locality. The boll weevil of Mexico and the United States has never reached Peru.

Finance and taxation: From 25 to 50 percent of the Peruvian cotton crop is usually sold before it is ready for picking. Prices are based on samples of cotton produced during the previous season on the same farm, and are subsequently adjusted if the quality of the new crop differs. Loans are advanced by banks, cotton buyers, and financing institutions, up to 40 or 50 percent of the estimated value of the cotton to be sold, at interest rates ranging from 6 to 10 percent. Agricultural banks finance the farmer without requiring the immediate sale of his cotton, but they maintain a more or less strict jurisdiction over the marketing of it.

Legislative provision is made for assessment of a special export tax on cotton, which, however, is not operative at the present time. The tax is based on the Liverpool price of "Good fair" Tanguis cotton and amounts to 10 percent of the proceeds of cotton exports after the cost of transportation to Liverpool and the cost of production as estimated by the Government have been subtracted. Thus when prices are below the officially estimated cost of production plus freight, as at present, no export tax is assessed. The officially estimated cost of production is now equivalent to about 10 cents per pound, and of transportation, 3 cents per pound.

Ginning facilities: There are 89 gins in Peru. Most of them are owned and operated by plantation owners but also do outside work for small growers. American gins predominate and saw gins are increasing more rapidly than roller gins. Mechanical dryers have been installed by some ginners because a great deal of cotton is picked in foggy or misty weather, and it is claimed that the improvement in the quality of the cotton more than justifies the additional expense. Ginning is usually paid for in cotton seed by small planters, although some of them sell their seed cotton to the ginners before ginning. Prices of seed are fixed each year by agreement between ginners and growers and ranged from 3.50 to 4.00 soles per quintal ($17.25 to $19.75 per short ton) in 1937.

Export trade: About 85 percent of Peru's cotton production is exported. The United Kingdom has been traditionally the major export market for Peruvian cotton, followed in importance in recent years by Germany, Japan, Belgium, and France. Exports to the United States have been insignificant since 1929.

Table 2. Exports of raw cotton from Peru, 5-year averages
1901 to 1920, annual 1921 to 1937
(In bales of 500 pounds gross)

Year ended December 31	Exports	Year ended December 31	Exports
	Bales		Bales
Average		Annual	
1901-1905.....	33,942	1926	220,610
1906-1910.....	65,446	1927	249,491
1911-1915.....	90,882	1928	205,204
1916-1920.....	118,488	1929	200,232
		1930	240,847
Annual			
1921..........	160,190	1931	206,774
1922..........	174,772	1932	204,714
1923..........	186,937	1933	241,770
1924..........	176,120	1934	296,744
1925..........	175,054	1935	340,922
		1936	348,865
		1937 a/	355,715

Compiled from Extracto Estadistico del Peru and Annario del Comercio Exterior del Peru.
a/ Preliminary.

Domestic consumption: There are 16 textile mills in Peru, 11 of which are located in Lima. Mill consumption has increased rather sharply since 1932, but still accounts for less than 10 percent of total cotton production. The devaluation of Peruvian currency in 1932 gave temporary stimulus to the domestic manufacturing industry. During 1935 imports of textiles were so heavy, however, that import quotas were imposed on each country supplying textiles to Peru. By the end of 1935, they were found to be unnecessary, and all were removed except those on Japanese textiles.

Table 3. Mill consumption of cotton in Peru, 1921-1936
(In bales of 478 pounds)

Year	Mill consumption	Year	Mill consumption	Year	Mill consumption
	Bales		Bales		Bales
1921.......	13,167	1927.......	18,862	1933.......	23,983
1922.......	12,858	1928.......	18,337	1934.......	28,387
1923.......	14,085	1929.......	16,562	1935.......	29,767
1924.......	15,570	1930.......	16,823	1936.......	30,032
1925.......	14,072	1931.......	17,532		
1926.......	16,271	1932.......	18,216		

Cottonseed, oil, and cake: Official statistics relating to production of cottonseed are not available, but an unofficial estimate places 1936 production at 76,000 short tons. This figure appears low, however, in relation to lint production in that year. During 1936, about 35,000 tons of cottonseed were exported, virtually all of which was taken by Chile.

The cottonseed-oil industry has developed rapidly in recent years. For some years prior to 1934, a heavy export tax on cottonseed was in effect. This enabled the industry to buy its raw materials much below the world price and to gain a firm foothold. The tax was abolished in 1934, but has subsequently been restored in modified form, the rate varying at different ports of export. At the present time, exports from the port of Callao are prohibited. The oil industry has continued to make rapid progress, and the former large import trade in lard has declined sharply with increasing use of domestic vegetable oil and other lard substitutes. During the early part of this year, vegetable compound produced by one of the larger Peruvian firms was retailing at the equivalent of approximately 9 cents United States currency per pound, as compared with a price of about 14 cents per pound for lard. In addition to the widespread domestic consumption of cottonseed oil, small quantities of refined oil are exported to the nearby Latin American countries.

Cottonseed cake is not used in large quantities by the Peruvian cattle-raising and dairy industries. As a result, most of this product is exported. Denmark is the principal market for cottonseed cake from Peru, and other Scandinavian countries are occasional heavy purchasers, as is the United Kingdom.

Sugar

Sugarcane has been grown in Peru since the early Spanish colonial days. The sugar industry does not appear to have assumed important proportions until about 1880, however, and most of its expansion has taken place since the beginning of the present century. Until about 1924, when cotton assumed first position, it was Peru's most important agricultural export product. Returns to the industry have been largely dependent on world sugar prices. While exports during the 5 years from 1932 to 1936 averaged 369,000 short tons, and showed a quantitative increase of about 32 percent over average exports of 280,000 tons for 1921-1925, their value declined by about 69 percent, from an average of $19,422,000 during the earlier period to an average of only $6,090,000 in 1932-1936.

Acreage and production: Commercial production of cane for sugar is largely confined to the large plantations in the irrigated valleys of the coastal plain. The crop is grown to some extent, however, in all parts of the country where water is available and up to an altitude of about 3,500 or 4,000 feet. Outside of the large plantations of the coastal regions, cane is produced for the manufacture of alcohol and low-grade sugar for native consumption. The districts of Trujillo, Chiclayo, and Chancay account for about 88 percent of total sugar production, the district of Trujillo alone accounting for over 56 percent. All of the important producing areas lie north of Lima, where the climate is warmer than in the southern part of the country.

The acreage devoted to cane has been fairly constant in recent years, averaging 132,000 acres from 1932 to 1936 in comparison with 130,000 acres from 1921 to 1925. The harvested acreage has shown an increase of about 20 percent between the two periods, from an average of 66,550 acres in the 1921-1925 period to 80,000 acres in the 1932-1936 period. Sugar production has shown a considerably greater increase than harvested acreage, having increased by 34.5 percent between the two periods, from an average of 331,000 short tons to an average of 445,000 tons.

Table 4. Cultivated and harvested acreage of sugarcane and sugar production in Peru, 1921-1936

Year	Sugarcane acreage		Sugar production
	Cultivated	Harvested	
	Acres	Acres	Short tons
1921	125,643	59,813	296,530
1922	125,559	67,288	351,988
1923	131,176	66,618	353,238
1924	137,721	73,903	349,323
1925	132,114	65,131	303,751
1926	131,442	76,465	414,424
1927	140,946	79,186	413,199
1928	131,662	72,267	398,742
1929	136,696	82,749	472,176
1930	131,087	73,193	440,595
1931	124,318	82,922	429,785
1932	123,708	76,725	427,566
1933	149,021	84,469	476,902
1934	127,140	76,954	429,854
1935	130,570	82,529	439,724
1936	131,610	79,401	451,402

Compiled from official and trade sources.

The greater increase shown in sugar production in recent years, in relation to harvested acreage, is doubtless a result of shifts to more efficient areas, and to concentration of production in the more efficient mills, changes which have been compelled by the low prices of sugar in recent years. In this connection, it is reported that the number of plantations engaged in the commercial production of cane for sugar has declined from an average of 90 in the 1921-1925 period to an average of 69 in 1932-1936.

Factors affecting sugar industry: Inasmuch as Peru's commercial production of sugar is confined to the irrigated-valley lands of the coastal-plain area, and changes in temperature from month to month are slight, there is no well-defined planting or harvesting time. Cutting and grinding is a more or less continuous process, and the absence of a rush campaign season makes for economical operation and steady employment.

Official reports indicate that 23 centrals, or sugar mills, were in operation in 1936. As in the case of cane production, it appears that the mill operations have tended to concentrate in recent years in a smaller number of the more efficient units. Equipment on the larger plantations and in the important mills is reported to be modern and very efficient. Work is constantly carried on in selection of varieties of cane best suited to local conditions, and in the control of any diseases or insect pests that may affect the industry. The four principal varieties of cane grown in Peru at the present time are "B 376," "B 1012," "POJ 2878," and "POJ 2714." The first two of these varieties were introduced from Barbados and the latter two from Java.

Wages of field hands are equivalent, at current rates of exchange, to about 44 cents per day, and of central workers to about 54 cents per day. Their purchasing power is higher than these figures would appear to indicate, however, as the Peruvian sol retains buying power for domestic products considerably in excess of its foreign exchange value.

Types of sugar produced and principal markets: There are no sugar refineries in Peru, and production consists largely of raw sugar for export. During recent years (1932-1936) raw sugar has made up about 83 percent of the country's total sugar production. The United Kingdom and Chile constitute Peru's two major markets for raw sugar. Special tariff arrangements are in effect between Peru and Chile, which favor the exchange of Peruvian sugar for Chilean wheat.

The production of plantation white sugar has been increasing and now accounts for about 13 percent of total production. About two-thirds of the white sugar is consumed at home, and the remainder is exported, largely to other South American countries.

Production of brown sugars, i.e., "muscovado" and "chancaca," each account for about 2 percent of the country's total sugar production.

The latter, which is the lowest grade produced, comes chiefly from antiquated mills in the mountain and trans-Andean regions, and is largely consumed in these areas. About half of the small production of muscovado is exported. Generally speaking, the Peruvian Government endeavors to avoid placing heavy tax burdens on articles of prime necessity, and as a result, domestic prices of sugar are low. The best quality of plantation white sugar retails at about 3.2 cents per pound, and other grades as low as 2.75 cents per pound. Brown sugars are still cheaper. As a result, domestic consumption of sugar has shown a considerable increase in recent years and in 1936 was approximately 29 pounds per capita. During the 5 years from 1932 to 1936, about 18 percent of the production was consumed locally. With more than 80 percent of total production going to export markets, however, the future outlook for the Peruvian sugar industry will depend largely on conditions in the world sugar markets.

Table 5. Exports of sugar from Peru, 1921-1936

Year	Exports	Year	Exports
	Short tons		Short tons
1921	263,842	1929	400,554
1922	302,447	1930	373,442
1923	311,391	1931	363,992
1924	292,671	1932	358,393
1925	229,433	1933	404,028
1926	364,936	1934	352,691
1927	331,166	1935	372,067
1928	337,271	1936	359,534

Cereals and Miscellaneous Crops

The principal food crops of Peru, other than sugar, are wheat, rice, corn, potatoes and other root crops, and beans. Barley and quinoa are also of importance in certain areas. In the highlands, corn, potatoes, wheat, and beans constitute the staple foodstuffs of the inhabitants. In the coastal area and in the cities, relatively smaller quantities of corn, potatoes, and beans, and larger quantities of wheat and rice, are consumed.

Peru is largely, or entirely, self-sufficient in these crops, with the important exception of wheat. Despite efforts of the Government to increase wheat production, between one-half and two-thirds of Peru's wheat requirements in recent years have been supplied by imports.

Wheat

Wheat has been grown in the mountain valleys and the tillable highlands of Peru since early colonial days, and has been one of the staple crops of the mountain country for almost 400 years. While the bulk of the crop is grown between altitudes of 6,000 and 11,000 feet, considerable quantities come from both lower and higher elevations. The conditions under which the crop is grown are extremely variable, it being grown in some areas as winter wheat and in other regions as a spring crop. Most of it is produced in those sections of the mountain area which have considerable rainfall, but some is grown under irrigation.

The Departments of Junin and Huancavelica are the two most important single wheat-growing areas, and together accounted for about 40 percent of the 1935 crop, the latest year for which detailed data are available. Their prominence is doubtless due primarily to the fact that they are the mountain regions lying nearest the large consuming center of Lima-Callao, and connected with this important market by rail.

Acreage, production, and yield: Wheat acreage in Peru during the most recent 5 years (1931-1935) for which statistics are available averaged 276,000 acres. This figure represents an increase of about 23 percent over the 1921-1925 average of about 225,000 acres. It is, however, substantially below the peak of approximately 350,000 acres reached in 1929 and 1930. Production and yield have shown pronounced fluctuations from year to year. In 1929 and 1930, when peak acreage and large yields coincided, production was about 4,500,000 bushels. In 1934, however, with acreage about 25 percent below the peak years of 1929 and 1930, and with a yield about 53 percent lower, production dropped to only 1,759,000 bushels.

Table 6. Wheat acreage, production, and yield in Peru, 1921-1935

Year	Acreage	Production	Yield per acre
	Acres	Bushels	Bushels
1921.............	231,908	3,001,464	12.9
1922.............	237,406	2,994,688	12.6
1923.............	303,916	2,786,443	9.2
1924.............	222,603	2,872,861	12.9
1925.............	229,158	3,185,006	13.9
1926.............	217,735	2,672,547	12.3
1927.............	283,765	3,149,161	11.1
1928.............	259,364	3,075,293	11.9
1929.............	351,263	4,467,034	12.7
1930.............	352,923	4,524,758	12.8
1931.............	288,477	3,484,545	12.1
1932.............	292,107	3,117,214	10.7
1933.............	298,393	2,673,753	9.0
1934.............	261,081	1,758,721	6.7
1935.............	240,876	2,133,990	8.9

Compiled from official sources.

Factors affecting wheat production: Certain basic factors have contributed to Peru's failure to realize its objective of self-sufficiency in wheat. Perhaps the most important of these is the transportation factor. The crop is necessarily confined to the mountain valleys and plateaus which possess a temperate climate, the best producing regions being in the mountain valleys in southern Peru, where the climate is cooler than in the north. The limited railway and highway facilities in the uplands make the transportation of wheat from the mountain areas to the major consuming centers along the coast an expensive process. Further extension of railways and highways in the mountain areas will necessarily be a slow and costly process because of the unusual heights and ruggedness of the Andes Mountain chain.

Rust damage is frequently severe, and is primarily responsible for the sharp fluctuations in yields. Several types of rust are common, and strains of wheat which are resistant to one type may not prove resistant to another type. A great deal of work is being done, however, by the Peruvian Bureau of Agriculture in an endeavor to develop rust-resistant types of wheat adaptable to the mountain regions. In addition to its experiment station work in developing rust-resistant types of wheat, the Government recently sent to the United States an agronomist to make a detailed study of rust in the wheat fields of Minnesota and the Dakotas.

Soil and terrain also present severe handicaps to the production of wheat in Peru on a sound economic basis. The mountain slopes and plateaus on which much of the crop is grown are frequently lacking in soil fertility and, in addition, present severe obstacles to large-scale production and the utilization of modern machinery. As yet, wheat is largely sown and harvested by hand, and the grain threshed by treading oxen. The Peruvian Government, however, has endeavored to encourage the use of modern machinery. A display of modern equipment was recently placed in the offices of the Ministry of Fomento for several months, where a large number of farmers had an opportunity to visit it. Subsequently, this machinery was distributed to experiment stations and agricultural schools in various parts of the country, where it is loaned out to farmers for use free of charge. The financial inability of the Indian small farmer of the uplands to invest in expensive machinery, and his distaste for change from the methods used by his forefathers, in addition to the difficulties of terrain, are likely, however, to make the introduction of modern farm equipment for wheat production an exceedingly slow process.

Import trade in wheat and wheat flour: Peruvian imports of wheat during the 5 years from 1931 to 1935 averaged 3,941,000 bushels. Imports of wheat flour were of relatively minor importance, their wheat equivalent having averaged only 168,000 bushels in this period. Combined imports of wheat and flour accounted for about 60 percent of apparent consumption during the 5 years. This percentage is somewhat higher than in earlier years, however, as a result of the short crops of 1934 and 1935.

Table 7. Imports of wheat and wheat flour into Peru, 1931-1935

Year	Wheat imports	Wheat flour		Total
		Imports	Wheat equivalent	
	Bushels	Barrels	Bushels	Bushels
1931	3,788,376	80,292	377,372	4,165,748
1932	3,043,898	40,837	191,934	3,235,832
1933	3,100,368	11,049	51,930	3,152,298
1934	4,658,875	30,811	144,812	4,803,687
1935	5,112,162	15,915	74,800	5,186,962
Average 1931-1935	3,940,736	35,781	168,170	4,108,906

Compiled from official sources.

Most of the imported wheat is milled in the Lima district, which is the principal center of flour consumption. More than half of the relatively small quantity of flour imported into Peru comes into the Amazon port of Iquitos, as transportation costs make it more economical to import foreign flour into this area than to ship domestically-milled flour from Lima.

Argentina, Chile, Australia, and Canada have been the principal countries of origin of Peruvian wheat imports in recent years, while the United States has been the major supplier of flour. Imports of wheat from Argentina and Chile are facilitated by special tariff arrangements between these countries and Peru. Peru permits the duty-free importation of 10,000 metric tons (367,433 bushels) of Argentine wheat annually in return for certain concessions from Argentina on Peruvian petroleum. Should the importation of wheat into Peru from any other South American country exceed 10,000 metric tons, the duty-free quota granted to Argentina is to be increased by a similar amount up to 20,000 metric tons (734,867 bushels), with Argentina granting corresponding concessions on Peruvian petroleum. Peru permits the duty-free entry of an annual quota of 40,000 metric tons (1,469,733 bushels) of Chilean wheat in return for preferential treatment on 70 percent of total Chilean imports of sugar.

Measures to increase use of domestic wheat: The Peruvian Government regulates imports of wheat, and has made compulsory the mixing of certain percentages of native wheat with imported wheat in the milling industry. In addition, the millers who import wheat have been compelled to establish buying agencies for domestic wheat in a number of the principal producing areas. The Government also fixes prices for domestic wheat based on its milling quality in relation to that of imported grain. Monthly reports are required from millers concerning utilization of imported and domestic wheat, and production of flour and byproducts. Reduced railway freight rates were made effective on domestic wheat when world wheat prices were at extremely low levels, but with higher prices subsequently, the previous freight rates were restored.

The agency charged with the control of the milling industry has also carried on experiments in the mixing of rye and quinoa flour with wheat flour. Present production of rye and quinoa is too small, however, to permit any large-scale substitution of these grains for wheat.

Rice

Rice is the only cereal which is grown as a major crop on large plantations in the irrigated coastal valleys. The larger part of the total production, however, is accounted for by small proprietors and renters, most of whom sell their grain to owners of rice mills. The Departments of Lambayeque, La Libertad, and Piura in the extreme northwestern part of the country are the principal rice-producing regions. They accounted for over three-fourths of total production in 1935, the latest year for which production data by areas are available. Rice acreage has shown a general upward trend since the World War and averaged 125,000 acres during the 5 years 1932-1936, compared with an average of 78,000 acres in 1921-1925. Though crops grown on irrigated lands in equable climates usually show rather stable yields, Peruvian rice yields have fluctuated considerably. This is probably due mainly to yearly variations in the supply of water available in certain of the irrigated valleys, and to a high degree of sensitivity to apparently slight differences in weather in one year as compared with another.

Table 8. Rice acreage, production, and yield in Peru, 1921-1936

Year	Acreage	Rough rice		Production of milled rice
		Production a/	Yield per acre	
	Acres	Bushels	Bushels	Pockets
1921	70,787	2,690,396	38.0	685,079
1922	89,005	3,248,748	36.5	926.814
1923	85,840	3,191,085	37.2	853,665
1924	76,334	1,816,100	23.8	462,305
1925	66,927	2,166,877	32.4	554,832
1926	64,678	1,949,160	30.1	500,224
1927	86,258	2,619,996	30.4	714,555
1928	74,387	2,909,827	39.1	807,391
1929	117,251	5,109,626	43.6	1,271,128
1930	115,270	5,526,050	47.9	1,376,420
1931	117,933	4,985,042	42.3	1,374,237
1932	133,562	6,673,128	50.0	1,862,468
1933	147,736	4,314,549	29.2	1,208,187
1934	112,440	4,168,752	37.1	1,164,359
1935	116,392	3,807,589	32.7	1,046,039
1936	116,938	5,151,611	44.1	1,427,523

Compiled from official sources.

a/ Calculated on basis of acreage and average yields.

A comparison of production and imports during recent years (1932-1936) indicates that an average of about 91 percent of Peruvian rice consumption is now supplied by domestic production, and about 9 percent by imports. In years of larger-than-average crops, however, imports may be negligible. Ecuador and the Far East are the principal sources of imported rice.

The position of the Peruvian rice-growing industry is decidedly different from that of the two leading crops - cotton and sugar - of the irrigated sections. Both cotton and sugar are grown predominantly for export and must compete in world markets. Rice, however, is produced at a cost distinctly higher than that of the major exporting countries, particularly those of the Far East, and the Peruvian industry is largely dependent upon a protective duty for its existence. The duty at the present time is equivalent to approximately 1.52 cents per pound on hulled rice and 1.06 cents per pound on rough rice.

While the Peruvian Government extends protection to rice growers, it is keenly concerned when the price of rice goes too high. It is a staple food of the working people in the coastal areas and is thus a factor in the cost of production of cotton and sugar, as well as a major food item for consumers in general. Following the short crop of 1937, legislation was enacted to fix retail prices of rice, to penalize concealment of stocks, and the Government itself contracted for the importation of 7,165 short tons of rice to meet the shortage. In 1935, following short crops, permission was granted plantation owners to import 30,000 bags of second-grade rice at a nominal duty of 0.43 cent per pound, for the use of their tenants and workers.

Rice-growing is not likely to expand much in Peru, because the crop cannot be produced at a cost which would make production for export feasible in competition with countries in which natural conditions are more favorable to rice production. Furthermore, with its need for large amounts of water, there are definite limitations to rice production in even the irrigated areas of Peru. It is probable, however, that production will continue at levels which will be more or less in line with domestic consumption, unless prices of cotton and sugar increase materially in relation to those of rice. While considerable areas in the Amazon territories of Peru are said to be suited to rice production, any appreciable development in this area must await improvement in transportation and increased population.

Corn

Corn is indigenous to Peru, and is grown in all of the agricultural regions of the country, including both the coastal valleys and the mountain districts. On the cotton and sugar plantations of the coastal region it is usually cut green and fed to livestock as forage. In the mountain country in particular, corn is an important article in the diet of the Indian population.

Probably because corn has always been grown widely, yet does not enter into export or import trade in important quantities, its importance in the country's internal economy is frequently overlooked. Only fragmentary statistical data relating to production are available. In 1929 the area devoted to corn was officially estimated at 691,000 acres, and total production at 17,778,000 bushels.

Small quantities of corn are imported in some years; imports in 1936 amounted to about 62,000 bushels. Transportation costs from the mountainous interior chiefly account for such imports into the coastal area, as transportation by water from Argentina and Chile to the port towns of Peru is often cheaper than from the mountain regions only a short distance inland.

Miscellaneous cereals

Considerable quantities of barley are grown in the mountain regions at elevations of 11,000 to 14,000 feet. The area devoted to barley in 1929 was estimated at 308,000 acres, and production at 5,443,000 bushels. Practically the entire domestic production is consumed in the mountain country, and there is a small, but fairly regular import trade in barley for utilization in the brewing industry in the coastal cities.

Quinoa is a small grain grown in the high mountain areas by the Indian population since pre-Inca times. The area devoted to this crop in 1929 was estimated at approximately 35,145 acres, and production at about 13,300 short tons. Small quantities of rye also are grown in the mountain regions, but the area given over to rye production probably does not exceed 12,500 acres.

Potatoes and other root crops

The white potato is indigenous to Peru, and was the staff of life of the Indian population in the days prior to the Spanish conquest. Despite the introduction of European grains such as wheat and barley, it is still the most important article of diet of the Indian population of the Peruvian highlands. As in the case of corn, its production is more or less taken for granted, and its importance to the country is frequently overlooked because it does not enter into import or export trade in appreciable quantities.

The potato grows wild in certain of the mountain valleys, and is produced under cultivation up to elevations of 14,000 feet. A food product known as chuño is made by the Indians by a process of alternately freezing and thawing, and then drying the potatoes. Chuño will keep indefinitely, and is the staple food of the Indians of the highlands. In 1929, potato production was estimated at 30,143,000 bushels. Data relating to acreage are not available.

Other root crops of considerable importance in the highlands are the oca and the ullucu. While not related to the potato, these tubers are similar to some of the native varieties of potatoes, and are reported to have good food and keeping qualities. In the warmer parts of the country, where white potatoes do not thrieve, sweet potatoes and mandioca are important food crops. Production of sweet potatoes in 1929 was estimated at 103,000 short tons, and of mandioca at 154,000 tons.

Legumes

Beans and peas of various varities were grown in Peru before the Spanish conquest. They have continued to be important articles of production for domestic consumption, and are grown in both the mountain country and the cultivated areas of the coastal plain. Broad beans (habas) in particular are grown extensively, but statistics relating to production of legumes and principal producing regions are fragmentary. Chickpeas are a fairly important article of import trade, coming principally from Chile.

Fresh vegetables

Commercial production of fresh vegetables is confined to areas near the larger towns, particularly Lima. A considerable part of the production in the Lima district is in the hands of Chinese gardeners.

Fruit

With the great range of climatic conditions obtainable in Peru at various altitudes, almost every variety of fruit can be grown in some part of the country. Little attention has been paid to the commercial production of fresh fruits until recent years, when cotton and sugar production in the coastal valleys has been less profitable than in earlier years. Wine grapes and olives are probably the most important of the fruits grown commercially, with production centering in the Ica valley. Considerable quantities of bananas are imported from Ecuador, and there is a small trade in deciduous fruits, principally apples and pears, from Chile and the United States.

Production of grapes for the manufacture of wine and brandies is important in certain sections of the country, particularly in the Ica district. In 1929 there were 17,290 acres in vineyards in Peru, of which over half were in the Ica district. Both red and white wines are produced, and "Pisco," taking its name from the principal port of shipment, is a well-known type of Peruvian brandy.

Tobacco

Tobacco manufacture and import trade are under control of a govermental monopoly. The monopoly also exercises close control over the growing of tobacco, and prospective growers must have a license before undertaking production. All of the producing areas are located in the northern part of the Republic. Production in 1936 amounted to about 1,785,000 pounds. Small quantities of Cuban, United States, and Near Eastern leaf tobaccos are imported for use with the domestic product in cigar and cigarette manufacutre.

Coffee

Coffee production has developed rapidly in the past 15 years, although it is still a minor crop. Exports during the 5 years from 1932 to 1936, principally to European markets, averaged about 6,000,000 pounds. The industry is attempting to concentrate on production of quality coffees, rather than in endeavoring to compete in large-scale production of lower-grade coffees.

Animal Husbandry

Prior to the coming of the Spaniards, the only domesticated animals known in Peru were the llama and the alpaca. The Spaniards, accustomed to livestock raising in their own country, were impressed by the skill of the Indians in raising and handling great herds of these animals, and recognized the treeless palteaus and mountainsides in the southern part of the Republic as natural sheep country. Salamanca, one of the companions of Pizarro, first brought sheep to Peru about 1535. The sheep introduced from Spain in early colonial days multiplied rapidly, but due to neglect of agriculture and animal husbandry for mining in colonial days, and the unsettled conditions which prevailed during the early years of the Republic, the stock tended to deteriorate. It is only recently that serious attempts have been made to place the sheep and wool industry, as well as other branches of the livestock industry, on a scientific basis.

In addition to sheep, all of the other kinds of livestock common to Europe were introduced into Peru in the Spanish colonial days, and cattle now rank next to sheep in numbers and importance in the livestock industry. Although the stock imported in the colonial period was permitted to deteriorate, animal husbandry occupies an important place in the internal economy of the country. It supplies practically all of the country's meat requirements, and per-capita consumption of meat, even among the poorest people, is reported to be considerably higher than in many of the European countries. Exports of sheep and alpaca wool, and of hides and skins, follow cotton and sugar in importance among Peru's agricultural exports.

There are, however, certain natural handicaps to any great increase in livestock breeding in Peru, although much can be done to improve existing breeds. The coastal lands are desert, and when irrigated are too valuable for the production of cotton, sugar, and rice, to be devoted to large-scale production of forage. The Amazon region is largely covered with tropical forests, and even where grazing areas occur, they are too isolated to make stock-raising profitable. Hence, the livestock industry of Peru is largely confined to the mountain region, which itself presents certain pronounced handicaps to the industry. Population is dense in the arable districts of the highlands, and most of the tillable land is devoted to food crops. Hence, the pasture lands are largely confined to areas at high elevations, which are at too great an altitude, are too rough, or receive inadequate rainfall for cultivation. Furthermore, the rigorous climate of the highlands and the frequently sparse pasturage, limit the types of livestock that may be raised successfully in these areas.

Sheep

The number of sheep in Peru is estimated to be in excess of 12,000,000 head. The sheep-raising industry centers in the southern and colder sections of the Andes area. The principal sheep ranges are found in the country lying between Arequipa and Lake Titicaca. The areas where most of the sheep are raised range from 9,000 to 16,000 feet in elevation, and the climate at this altitude is cold, even in summer. Most of the rain and snow in the southern highlands comes during the months of December to April, which are the summer months in this region. The winters in this area are dry, and pasturage during the winter months is sparse. Most of the ranches in the highlands are large, however, and contain a certain amount of mountain valley land, where pasturage is better than it is in the highlands during the winter months. Irrigation is carried on in some of the valleys, and alfalfa and other crops are grown to carry the flocks through the season of poor pasturage.

Despite active efforts to improve breeds in recent years, most of the sheep in Peru are still of native stock descended from the sheep imported from Spain during the colonial period. A factor which has contributed to the slowness in improvement of the stock is the fact that most of the flocks are in the care of Indians, who are good sheperds but know little concerning scientific stock-breeding. Wool yields usually do not exceed 1.5 to 2 pounds per animal.

Some years ago the Peruvian Government established an experimental sheep farm in the Province of Puna, and engaged a Scottish sheep expert to manage it. After considerable experimentation, it was found that crosses of Corriedale rams with native ewes produced the type of animal best suited to the Peruvian highlands, from the standpoint of both wool and mutton production. It has also been found that Chilean rams of the Corriedale type from the Magellan district give equally good results, and the Ministry of Fomento has been authorized to import 250 head of these rams during the current year, to be sold to sheep breeders at cost. Fleeces from Corriedale and native cross-breeds are reported to average about 5 pounds in weight.

In order to foster sheep raising, a National Board for the Wool Industry was created in November 1937 as a section of the Agricultural Bank of Peru. An export tax of 2.5 percent ad valorem is collected on all wool exported from Peru to provide funds for the work of the Board. The Board is to purchase breeding stock abroad for resale to Peruvian sheep breeders, and to establish experiment stations in various sections of the country where breeding stock will be maintained and technical instruction given to sheep raisers. The Agricultural Bank is also authorized to lend money to sheep raisers for the purpose of buying improved breeding stock.

Wool production is currently estimated at about 16,500,000 pounds. Exports during recent years (1932-1936) have averaged approximately 4,750,000 pounds.

Cattle

The cattle industry of Peru also centers in the highlands, although the high altitudes and sparse pasturage of much of the mountain country present severe handicaps to the industry. The native cattle of the mountain country are largely descendants of the original stock introduced by the Spaniards, and through natural selection have developed a hardy type adapted to these regions. The native stock of the highlands is small, however, and growth is slower than it is at lower altitudes. Also, it is difficult to improve the stock in the upland country, as cattle brought from low lands to the high altitudes are slow to breed, and frequently do not survive in the cold rarified atmosphere at 10,000 feet and higher.

Through governmental efforts, a number of varieties of breeding stock have been introduced for crossing with the native cattle. While favorable results have been obtained in the lower valleys, progress has been slow in the upland districts.

The Lima-Callao district is the largest single market for meat in the Republic. In getting their stock to the Lima market, cattle breeders in the mountain country frequently drive their cattle overland and down the valleys to the seacoast. During certain months, a considerable amount of native pasturage on Government land on the western slopes of the mountains facilitates the overland movement of cattle. Part of the stock driven down from the highlands is bought by plantation owners in the valleys to be fattened and placed on the market later.

In addition, the two railways which tap the mountain districts bring cattle to the coastal markets, and have contributed to increased livestock production in the areas tributary to their lines.

In recent years, considerable development of the dairy industry has been noted on the lower slopes of the mountains near the railways to Lima, as well as in districts near the city. Nevertheless, despite increased attention to the dairy industry, sizeable quantities of canned milk are imported.

Llamas and alpacas

The llama and alpaca, which were the only domestic livestock of the Incas at the time of the Spanish conquest, are still raised in large numbers by the Indians in the mountain highlands. Both the llama and the alpaca require a cold climate, and thrive at altitudes of 13,000 feet and higher.

The llamas are used principally as beasts of burden by the Indians, and can endure lower climates than the alpacas. Their major advantages as beasts of burden appear to lie in the fact that they can travel considerable distances without water in arid or semi-arid regions, and usually pick all the feed that they require by the wayside while traveling. As pack animals, they usually carry loads of 40 or 50 pounds. Their wool is much coarser than that of the alpaca, but is used by the Indians in blankets and other articles of home manufacture.

Alpacas are raised principally for their wool, as they are smaller than the llama and cannot be used as beasts of burden. They ordinarily produce an average of about 6 pounds of wool per year.

Very little appears to have been done to improve the breeds or encourage the production of these animals, which are of importance to a large section of the Indian population of the highlands. This is probably due to the fact that they thrive best in the high, isolated mountain regions where the white population is sparse, and they do not offer large immediate financial returns. In connection with the lack of attention that has been given to these native animals, in contrast to that devoted to sheep production, it is of interest to note that exports of alpaca wool during recent years have averaged considerably larger, on the basis of both quantity and value, than have exports of sheep wool. During the 5 years from 1932 to 1936, exports of alpaca wool averaged 6,508,000 pounds, valued at $1,055,000. During the same period, exports of sheep wool averaged 4,754,000 pounds, with an average value of $868,000.

Swine

The Peruvian Government has devoted a great deal of attention to improving the domestic swine, and during recent years a good many purebred hogs have been imported, particularly in the Lima district. Few farmers, however, devote their primary attention to hog raising. The lack of surplus production of corn and other feedstuffs that could economically be turned into pork is likely to prevent any large expansion in hog raising. Furthermore, there appears to be a consumer preference for beef and mutton.

Horses and mules

Horses are bred principally for saddle purposes in Peru. Most of them are descendants of the Andalusian stock introduced in the colonial period. In the mountain areas they have developed as a small, but extremely hardy and sure-footed saddle animal. In the coast country, a considerable amount of thoroughbred blood has been introduced in order to develop racing stock and cavalry mounts.

Mules are widely used in the mountain country as pack animals and, because of their sure-footedness, as saddle animals. They are also used as work stock to some extent and in certain areas appear to be gradually displacing oxen for this purpose.

Conclusions

Concerning the future outlook for Peruvian agriculture, it is apparent that further expansion in cultivated acreage in the coastal area will be slow, depending on progress in bringing additional land under irrigation. Additional acreages brought under irrigation will necessarily be at higher costs than heretofore as water already has been brought to those areas where it can be done most economically. Also, there are definite limitations to the amount of land that can be brought under irrigation. There may be shifts, however, between crops grown in this area, probably in the direction of increased production of food crops and feedstuffs, if world prices of the two major irrigated crops - cotton and sugar - do not improve.

In the mountain areas, two major problems must be met if agricultural production is to increase substantially. These are the problems of transportation and of education of the Indians, who make up by far the greater part of the population. Progress in both these fields will involve protracted effort. Aside from these problems, there will remain the natural restrictions which climate, soils, and terrain present to agriculture in the mountain areas.

Little is known of the agricultural resources of the great Montaña region to the east of the Andes. It is apparent, however, that for the near future at least, there is little likelihood of substantial agricultural development in this area, because of its inaccessibility and the sparseness of its population.

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GERMANY PLANS "RECONSTRUCTION" OF AUSTRIAN AGRICULTURE

A far-reaching program for the "reconstruction of agriculture in former Austria" has been planned by the German Minister of Agriculture, according to reports received from the American consulate general in Berlin. In general the program represents the extension of the assistance given within the Reich proper for the intensification of the "Production Battle" within the "Four-Year Plan."

The program provides for price reductions on fertilizers, credits for the purchase of fertilizers, credits for the construction of feed silos, flax and hemp subsidies, aid to the dairy industry, farm housing and equipment credits, aid to purchasers of farms, and irrigation credits.

Agriculture in Austria, according to German sources, was greatly encumbered by debt prior to the annexation by Germany. For that reason the program also provides for extensive relief to debtors. A moratorium on foreclosure sales of farm property in the Province of Austria has already been declared.

Practically all of the measures to be applied in the Province of Austria have as their object, either directly or indirectly, the increase of agricultural output, according to the report. Most of them represent some form of subsidization. The rates of subsidy in some cases, however, are double those being paid in the old Reich territory. As was the case in the Reich previously, it may be expected that considerable increase in production will be effected through these measures.

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FIXED PRICES AND REDUCED ACREAGE FOR CZECHOSLOVAK BEET SUGAR INDUSTRY

An agreement recently concluded between the Central Union of Czechoslovak Sugar Beet Growers and the Association of Czechoslovak Sugar Refiners provides for a guaranteed price of 12.40 crowns per quintal (about $4 per short ton) for beets delivered to factories during the 1938-39 marketing season, as reported by the American consulate general at Prague. This is the same as the price guaranteed for the 1937-38 crop.

The sugar refining industry agreed to pay 12.40 crowns per quintal for beets on the assumption that certain taxes previously collected by the Ministry of Finance would be refunded and that the sugar-beet acreage in 1938 would be reduced by 10 percent compared with the 370,000 acres sown in 1937. Should these taxes not be refunded the sowings are to be reduced by 15 percent. As in former seasons, each grower shares in the total acreage by a fixed quota or acreage allotment.

The basic price of 12.40 crowns per quintal will be paid for healthy beets, cleaned and trimmed. The price may be increased, depending on the average price of raw sugar during the months April 1 to December 31, 1938. If during that period the average price of raw sugar at Aussig on the Elbe shall exceed 77.50 crowns per quintal (about $1.20 per 100 pounds) the beet growers are to receive additional payment amounting to 6 percent of the amount by which raw sugar prices exceed that level.

The agreement also provides that for every 100 kilograms of sugar beets which a grower delivers in excess of his individual quota he will have to purchase from the refinery 1 kilogram of denatured sugar (for feedstuffs) at a price to be fixed by the Central Union of Czechoslovak Sugar Beet Growers and the Association of Czechoslovak Sugar Refiners. The price of this denatured sugar will be deducted by the refinery when making payment for the beets supplied by the grower.

In addition, the agreement provides that the refiners will supply the seed for the new crop, the amount depending on the amount of beets to be delivered; that beet growers will be given 4 kilograms of consumption sugar for every 100 kilograms of beets delivered to the factory; that growers will be entitled to 60 percent of the pressed beet pulp, one-half of one percent of the molasses derived from beets delivered and processed, and 6 percent of the lime saturation sediment resulting from the manufacturing process.

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WHEAT GROWERS IN LAGUNA DISTRICT OF MEXICO ORGANIZE CROP INSURANCE ASSOCIATION

For many years the farmers in the Laguna district of Mexico have discussed the possibility of taking out insurance against the damage that may be done to their wheat crops by hailstorms which frequently occur before the crop can be harvested. No insurance company, however, has been willing to issue policies against such damage. This year, therefore, a group of farmers have organized into an association for that purpose, according to a report received from the American Consulate in Torreon, Mexico. The members of the association have agreed to contribute up to a maximum of 20 percent of the amount they have invested this season in farming operations for the reimbursement of members whose wheat crops may suffer hail damage.

The base to be used for computing the amount of the contributions may not exceed 80 Mexican pesos per hectare (about $7 per acre) for land irrigated by river water and 150 pesos per hectare (nearly $14 per acre) for land irrigated by well water. The same base will be used for computing the payment due for any hail damage. Immediate assessments of one peso for every thousand pesos invested have been made to defray operating costs.

Members whose wheat crops have been damaged by hail must advise an executive committee within 24 hours of the storm. Two experts will then be appointed to investigate the extent of the damage, one to be appointed by the affected member and one by the committee. In case these two cannot agree a third will be appointed by a bank which has not financed the affected member. In case the three cannot agree the damage will be fixed at the average submitted by the three.

This insurance against hail damage is to be valid only up to the date on which the 1938 crop is harvested and in any event will not extend beyond August 31, 1938. On that date the accounts will be liquidated and the association will terminate its activities for the season.

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COLOMBIA PLANS AGRICULTURAL EXPANSION

A program for the expansion of agriculture in Colombia is being planned by the Colombian Ministry of Commerce and Agriculture, it is reported by the American Legation in Bogota. It is contemplated that the program will be carried through with Government aid, either direct or indirect, and that technical assistance — agricultural experts — will be brought in from other countries.

The program has three main objectives. The first aims at expanding production to a point where Colombia will be as nearly as possible independent of foreign sources of supply for food and fiber crops. Most vigorous efforts are to be placed on expanding the acreage devoted to corn, rice, sugar, potatoes, and cotton and on increasing cattle and sheep numbers.

The second objective is the conservation of the forest resources of the nation. In that connection an extensive study is to be made to ascertain what types of wood may be grown locally in order to reduce the quantities of lumber now being imported.

The third objective is to secure a more vigorous and scientific production of high-grade tropical products at the lowest possible price for the export market. The foreign exchange obtained from increased exports of tropical products will be depended upon to finance activities under points one and two. Under the heading of tropical products are classed such items as coffee, cacao, copra, medicinal herbs, bananas, and other tropical fruits. The possibility of establishing a rubber industry is also being studied.

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